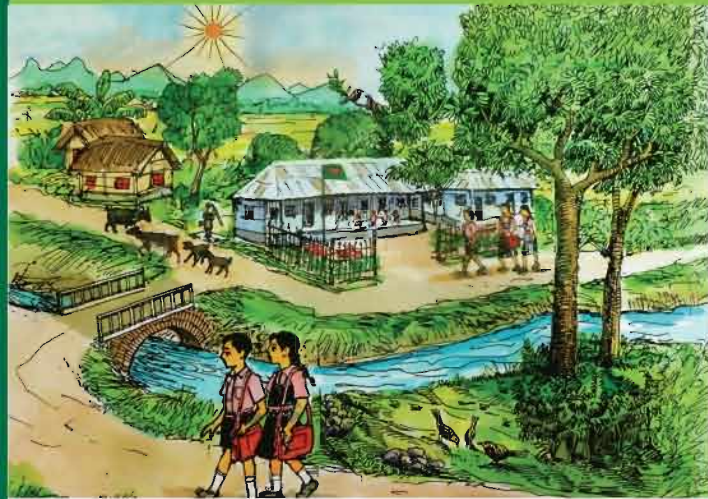


ELEMENTARY SCIENCE

CLASS THREE



National Curriculum and Textbook Board, Bangladesh

Prescribed by the National Curriculum and Textbook Board
as a Textbook for Class Three from the academic year 2013

Elementary Science

Class Three

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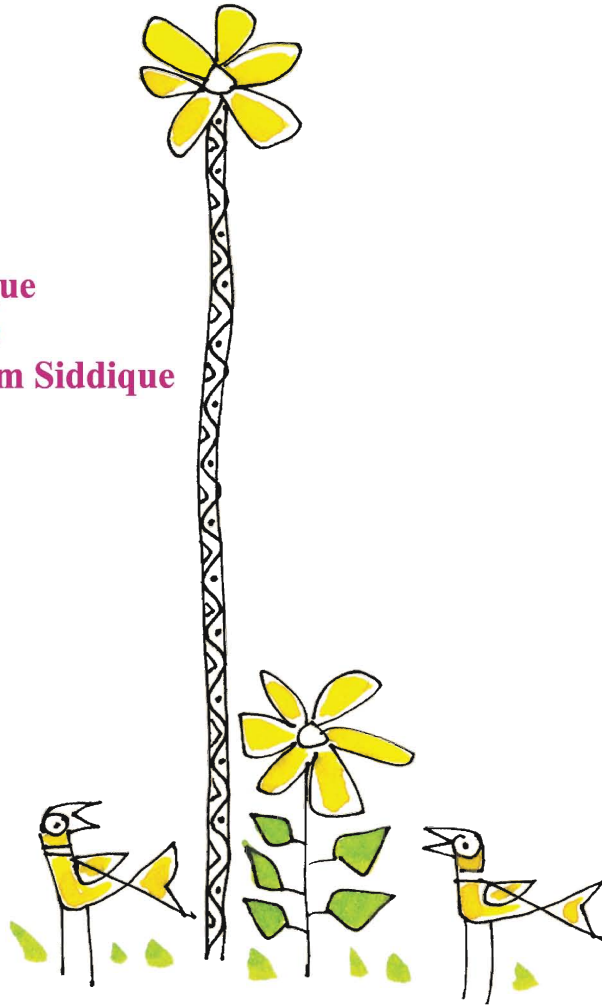
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Preface

A child is a great wonder. There is no end to the thinking about his/her world of wonder. A child is a subject of contemplation for educationists, scientists, philosophers, child specialists and psychologists. The fundamental principles of children education outlined in the National Education Policy 2010 have been defined in the light of these contemplations. The curriculum for primary education has been revised to develop a child on the potentials of his/her innate amazement, unbounded curiosity, endless joy and enthusiasm keeping in view the all-round development of children's potentials. The aims and objectives of primary education were modified in the revised curriculum of 2011.

Children have different objects around them. Every moment various events are taking place in nature. Rainbow in the sky, trees, birds, flowers, the morning sun, the star studded night sky—all are of profound joy and endless amazement. This feeling of joy by a learner awakens in him/her the curiosity and inquisitiveness to ask questions on different objects and events he/she observes. The revised curriculum has due importance to the realization that the aim of science education is to develop the scientific attitude among the learners. In fact, there is no joy in memorizing some dull and unrelated information. Information changes with new discoveries and inventions. Two fundamental streams are very important in **science education**. One is the acquisition of knowledge and the other is raising questions, experimentation, observation and participation through testing of information and theories. These two streams are complementary to each other. Another objective of the revised curriculum is to maintain consistency among different branches of science as well as between science and technology.

To make the young learners interested, enthusiastic and dedicated, Bangladesh Awami League Government under the dynamic leadership of the Honorable Prime Minister Sheikh Hasina has taken initiatives to change the textbooks into four colors, and make them interesting, sustainable and distributed free of cost since 2009. The textbooks of Pre-primary, Primary, Secondary, Ittedaie, Dakhil, Dakhil Vocational and SSC Vocational level are being distributed free of cost across the country which is a historical initiative of the present government.

My sincere acknowledgement and thanks to all who had helped in different stages of composition, edition, rational evaluation, printing and publication of the textbook. Though all cares have been taken by those concerned, the book may contain some errors/lapses. Therefore, any constructive and rational suggestions will be highly appreciated for further improvement and enrichment of the book. We will deem all our efforts successful if the young learners for whom it is intended find it useful to them.

Professor Narayan Chandra Saha

Chairman

National Curriculum and Textbook Board, Bangladesh

Major Features of the Revised Primary Science Textbooks

(1) User-friendly

- Learning contents, illustrations and text presentations are considered taking into account the developmental stage of pupils, which emphasize mainly on the conceptual development rather than rote learning.
- Enquiring of pupils' prior knowledge and experience are tried to address in the lesson.
- Grade fitting simple texts and child friendly description.
- Clear titles, subtitles, and large number of illustrations and photographs.
- Abstract things of science are portrayed with pictures/photographs as well as proper description.
- Introduction of characters and symbols to make lesson easy-to-understand & attractive for the children.
- New scientific terminologies used in each chapter are highlighted with coloured and bold letters.
- Addition of glossary at the end of the textbook.

(2) Emphasis on problem-solving based learning

- The key questions highlighted as the core points of teaching learning in each lesson.
- Experiment related alternative equipment/teaching aids are suggested.
- Basic layout of textbooks follows the sequence of problem solving approach.
- Learning activities aimed at the acquisition of scientific process skills necessary for children to solve the problem.

(3) Enhancement of learning activities

- Introduction of a variety of experiments, demonstration, observation and investigation to promote the scientific attitude of the pupils.
- Introduction of the discussion activities to foster communication skills, expression ability and positive attitude of the pupils.
- Teaching aids are suggested in consideration with the relevance of the lesson outcomes and the availability.

CONTENTS

Chapter	Topics	Page
Chapter - 1	Our Environment	2-5
Chapter - 2	Living and Nonliving Things	6-15
Chapter - 3	Different Types of Matter	16-21
Chapter - 4	Water for Life	22-29
Chapter - 5	Soil	30-35
Chapter - 6	Air	36-42
Chapter - 7	Food	43-52
Chapter - 8	Hygiene	53-57
Chapter - 9	Energy	58-62
Chapter - 10	Introduction to Technology	63-68
Chapter - 11	Information and Communication	69-74
Chapter - 12	Population and Natural Environment	75-78
	Glossary	79-80

Characters and symbols

1) Characters



Hea



Reza

Hea and Reza will give you some tips or clues about your learning. Let's learn science together!

2) Symbols



Activity: Let's observe, investigate and experiment!



Discussion: Let's discuss with classmates!



Caution: Let's pay careful attention to be safe!



Our Environment

There are many things around us such as friends, trees, animals, soil, water, air, sunlight, and houses. All the things surrounding us make our **environment**.

1. Things in our Environment

QUESTION: What surrounds us?



Activity: Things in our Environment

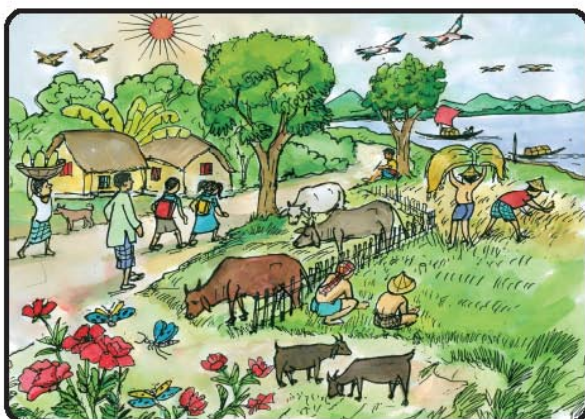
What to Do:

1. Make a table like the one below in your exercise book.
2. Find things in your classroom and write them in the table.
3. Let us go out of the classroom with our exercise books.
4. Find things in the field and write them in the table.
5. Share your idea with the class.

Things in the classroom	Things in the field/garden

Summary

We are surrounded by various types of things. In the classroom there are chairs, desks, books, classmates and teacher. There are trees, goats, soils, water, air and sunlight in the field. All these things unitedly make our environment.



2. Different Types of Environment

QUESTION: How can we classify the environment?



Activity: Classification of our environment

What to Do:

1. Make a table like the one shown below.
2. Make a list of two kinds of things in the table by looking at the picture below.
3. Share your ideas with the class.

Things made by people	Things not made by people

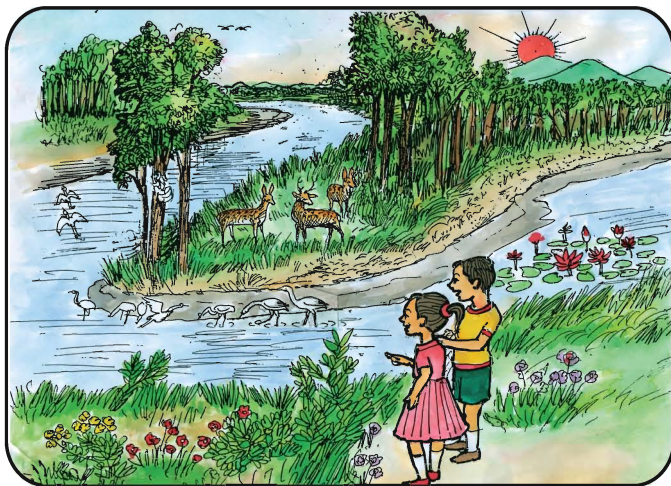


Summary

We can sort things in the environment into two groups; **natural things** that are not made by people and **man-made things**. The environment can be classified by its components; such as the **natural environment** and **man-made environment**. We live in both a natural and man-made environment.

Natural environment

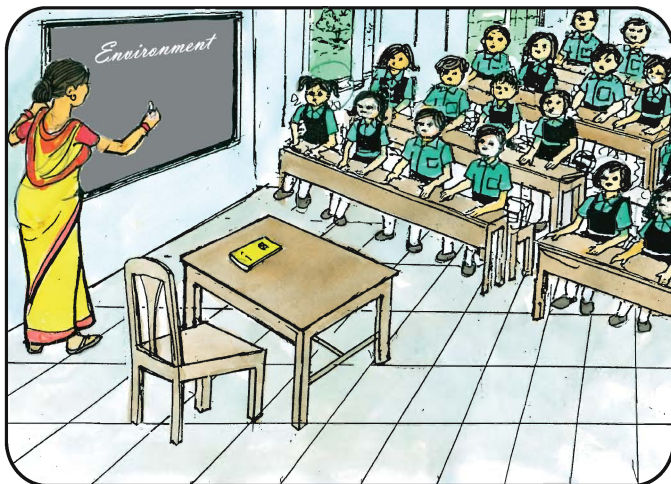
We are surrounded by many things such as trees, birds, sunlight, water and air. We cannot make these things. They are created by nature. An environment having these natural things is known as a natural environment.



Natural environment

Man-made environment

We make various kinds of things. Houses, buildings, tables and clothes are made by people. Roads, buses, trains and boats are also man-made things. An environment having these man-made things is known as man-made environment.



Man-made environment



EXERCISES

1. Fill in the blanks.

- 1) All the things surrounding us make our _____ .
- 2) The environment can be classified into _____ environment and _____ environment.
- 3) Trees, birds and air are components of _____ environment.
- 4) An environment having things made by people is known as _____ environment.

2. Put a tick (✓) on the correct answer.

- 1) Which one is a component of the natural environment?

a. tree	b. table
c. pen	d. chair
- 2) Which one is a component of the man-made environment?

a. birds	b. hills
c. fish	d. house

3. Answer the following questions.

- 1) Explain what an environment is.
- 2) Write five components of a natural environment.
- 3) Mention three differences between a natural and a man-made environment.

4. Sort the following thing in the table below.

chair, river, house, egg, soil, furniture,
tree, boat, hill, shirt, school, flower

Things in the natural environment	Things made by people



Chapter 2

Living and Non-living Things

We are surrounded by many things such as birds, trees, houses, and ponds that make our environment. We are studying in our classroom. There are chairs, tables, benches, doors and windows in it.

1. Living Things and Non-living Things

All things can be classified into two groups; **living things** and **non-living things**.

QUESTION: What is a living thing and a non-living thing?

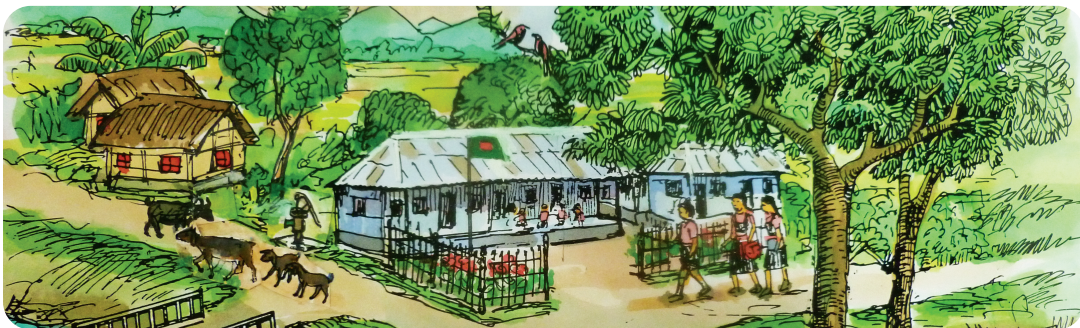


Activity: Make a List of Living Things and Non-living Things

What to Do:

1. Make a table like the one shown below.
2. Find living & non-living things inside or outside your classroom.
3. Sort the things you found into two groups in the table.
4. Share your ideas with the class.

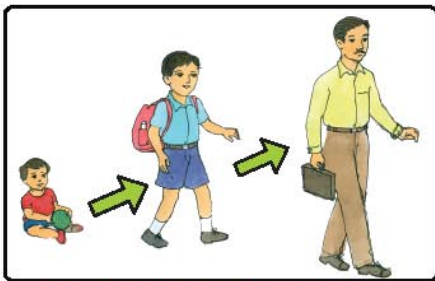
Living things	Non-living things
Man	Chair



Summary

Living things

People, animals and plants are living things. Living things grow, change and produce other living things. Living things need water, food and air to survive.



Living things are growing.



Living things need water.

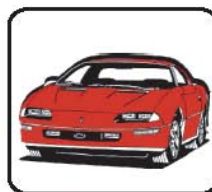


Living things need air.

There are two kinds of living things; plants and animals. Trees and grasses are plants. People, cows, and birds are animals.

Non-living things

Cars, chairs, tables and books are non-living things. Air, water, and soil are also non-living things. Non-living things do not eat, drink, and grow. They cannot produce other things.



Non Living things



Discussion

- ◆ What are the differences between living and non-living things ?
 1. Make a table like the one shown below.
 2. Make a list of the characteristics of living things and non-living things.
 3. Share your ideas with the class.

Living Things	Non-living Things
grows	does not grow

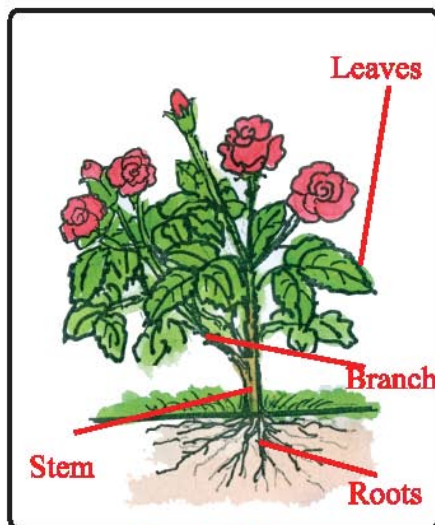


2. Living Things: Plants and Animals

There are two kinds of living things;
plants and **animals**.

Plant

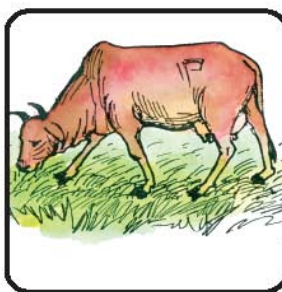
A plant has roots, stems, branches and leaves. Plants are generally rooted in one place. Plants cannot move from one place to another. Plants do not see, hear and smell anything. Plants do not eat food, but can make their own food.



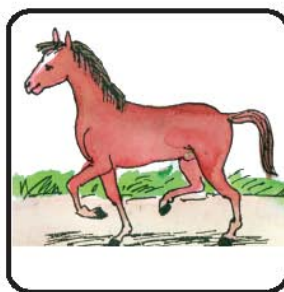
Parts of Plant

Animal

An animal has body parts like legs, wings and fins that help it to move. Most animals have the ability to move freely. Animals cannot make their own food. Animals eat plants and other animals. Animals use their eyes, ears, nose, mouth and other body parts for their senses. These parts help them to see, hear, smell and taste things.



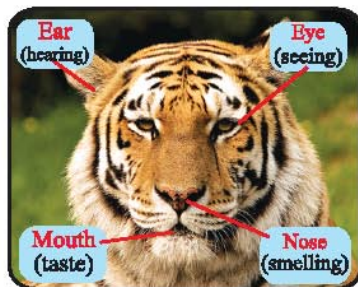
A Cow is eating grass.



A Horse is running.



A bird is flying.



Body parts & Senses



Discussion

◆ What are the characteristics of plants and animal ?

1. Make a table like the one shown on the right.
2. Make a list of what plants and animals can do.
3. Share your ideas with the class.

Plant	Animal



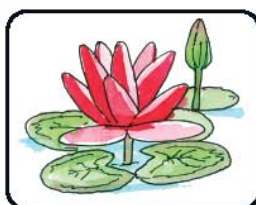
3. Plants

There are plenty of plants around us. Plants have root, stem and leaves. Some plants have flowers and bear fruits. Some plants have trunks and branches. People can harvest foods from plants. There are so many kinds of plants.

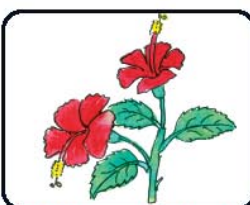
QUESTION: How can we classify plants ?



Activity: Different types of Plants



Water Lily



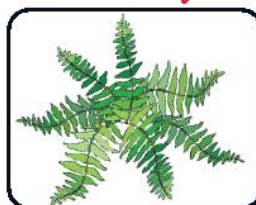
Hibiscus (Joba)



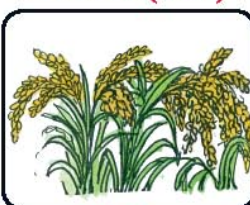
Mango



Pepper Plant



Dheki shak



Paddy



Moss



Mushroom

What to Do:

1. Make a table like the one shown below.
2. Make a list of the characteristics of each plant in the picture above.
3. Share your ideas with the class.

Name of plant	Size	Hardness of stem	Flowering or not
Water lily	small	soft	flowering
Hibiscus (Joba)			
Mango			
Pepper plant			
Dheki shak			
Paddy			
Moss			
Mushroom			



Summary

Plants can be classified according to their flowers, size and stems.

Non-flowering plants and Flowering plants

A plant that does not bear flowers is called a non-flowering plant. Moss and ferns (dheki shak) are non-flowering plants.

A plant that has flowers is called a flowering plant. Rose, Hibiscus, Mango and water lily are flowering plants.



Dheki shak

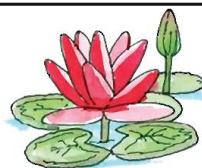


Moss

Non-flowering Plant



Mango



Water Lily

Flowering Plant

Classifying the size and stem of plants

A plant which is large in size with a woody main stem, and with branches or leaves is called a **tree**. Their roots go deep into the soil.

Mango, jackfruit and wood apple are examples of trees.

Plants such as Roses, Rongon and Hibiscus are **shrubs**. A shrub is a woody plant, smaller than a tree. They have several branches rising from near the base of the stem. Their roots do not go deep into the soil.

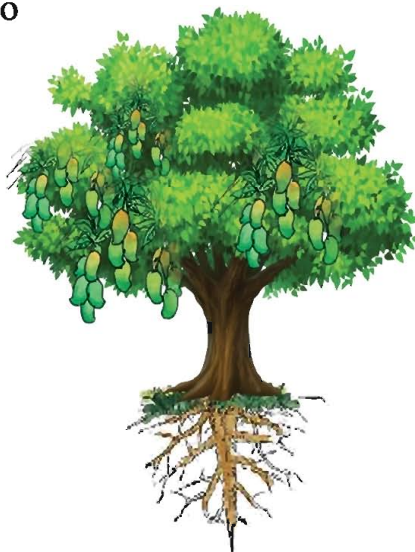
Plants such as paddy and chilli are called **herbs**. A herb is smaller than a shrub. They have soft stems which do not become woody. Their roots remain at the surface of the soil.



Herb (Chili)



Shrub (Rose)



Tree (Mango)



4. Animals

(1) Types of Animals

Animals can be classified into two groups; one group has a backbone and another has no backbone.

Invertebrate

Some animals do not have a backbone. Animals without backbone is called **invertebrate**. Some invertebrates live on land and some live in water. An earthworm, shrimp, butterfly, and snail are all invertebrates.



Earthworm



Shrimp



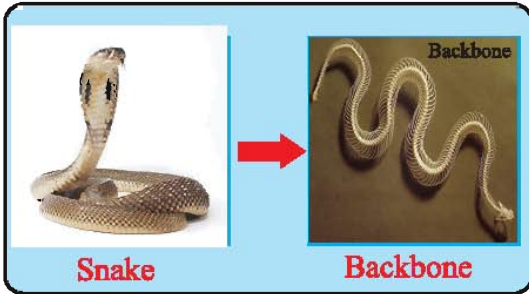
Butterfly



Snail

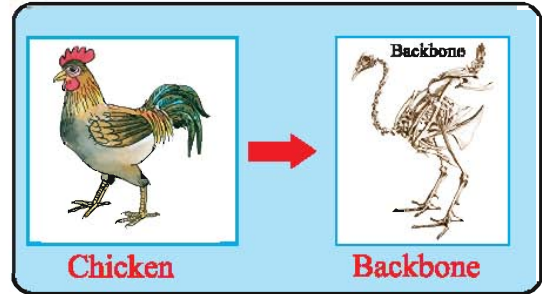
Vertebrate

An animal that has a backbone is called a **vertebrate**. A backbone is a series of bones that help to support the animal's body. Dogs and birds are vertebrates. A snake, frog and fish are also vertebrates.



Snake

Backbone



Chicken

Backbone



Discussion

◆ Which animals have a backbone ?

1. Make a table like the one on shown the right.
2. Make a list of invertebrates and vertebrates in the table.
3. Share your ideas with the class

Invertebrate	Vertebrate

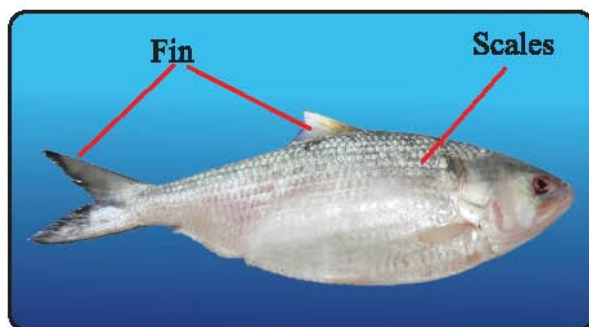


(2) Classification of Vertebrates

Vertebrates can be classified into five groups; **fish**, **amphibia**, **reptile**, **bird** and **mammal**.

Fish

A **fish** is a vertebrate that lives in water and lays eggs. Most fish are covered with scales, and can move with their fins in water.



fish

tadpole

Amphibian

An **amphibian** such as a frog is a vertebrate that lays eggs in water. They start life in the water and then live on land as an adult.



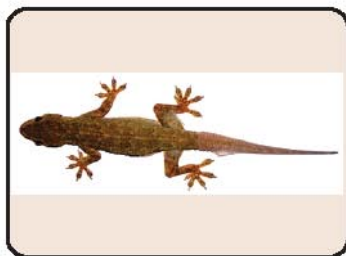
adult frog

Reptile

A **reptile** is a vertebrate that has dry and scaly skin, and lays eggs on land. Reptiles live on land or in water. Some move with legs like lizards, and others such as snakes slither along the ground. Some reptiles, such as crocodiles spend a lot of time in water.



Turtle



Lizard



Snake



Bird

A **bird** such as a duck, chicken and eagle has two wings and two legs. Their bodies are covered with feathers. Birds lay eggs and can fly with their wings.



A bird lays eggs



A bird can fly

Mammal

A **mammal** is an animal that has hair or fur, and produces milk for its young. Some mammals such as tigers and cows, live on land, and move with their legs. Mammals such as whales and dolphins live in water and move with their fins. A flying bat is also a mammal.



A dolphin lives in water



A cow produces milk



A bat is a mammal



Discussion

◆ What are the characteristics of a vertebrate?

1. Make a table like the one shown below.
2. Make a list of the characteristics of each group of vertebrates.
3. Share your ideas with the class.

	Where they live	What they are covered with	How they move
Fish			
Amphibian			
Reptile			
Bird			
Mammal			

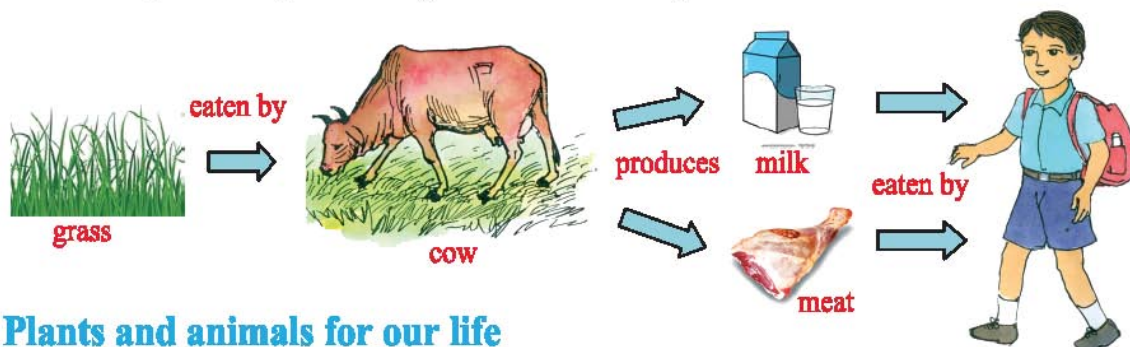


5. Our Relationship with Other Living Things

All animals need to eat food to survive. Some animals eat other animals, and some animals eat plants, fruits and grasses.

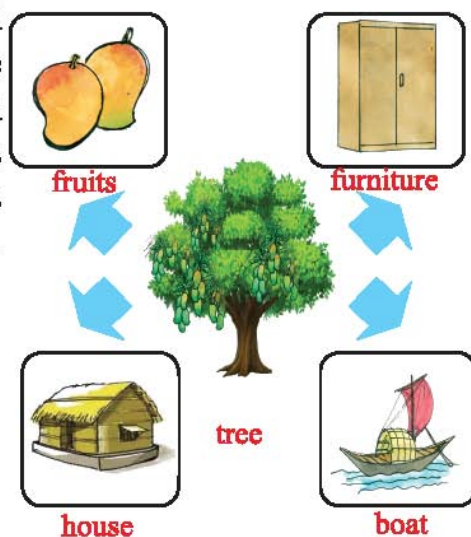
Eat and eaten

Grass and fruits are eaten by deer, rabbit and small birds. Deer and rabbits are eaten by tigers. Rabbits and small birds are eaten by hawks. There exists a relationship of eating and being eaten in our living world.



Plants and animals for our life

We need to eat food. Food comes from plants and animals. We also need clothes and shelter. Some clothes are made from plant parts, others from animal skin or fur. Wood is used to build houses and furniture. Like this, people depend on plants and animals in the natural environment to live. All living things depend on each other.



Discussion

◆ How do people depend on animals and plants?

1. Make a list of "Things" made from animals and plants and their uses.
2. Share your ideas with the class.



EXERCISES

1. Fill in the blanks.

- 1) Our environment consists of living things and _____ .
- 2) Living things need _____, _____ and _____ to survive.
- 3) Prawns and earthworms are _____ animals.
- 4) People depend on _____ and animals.

2. Put a tick (✓) on the correct answer.

- 1) Which one is a living thing?

a. chili plant	b. house
c. rickshaw	d. aeroplane
- 2) Which one can grow?

a. car	b. pigeon
c. chair	d. stone
- 3) Which one is a non-flowering plant?

a. mango	b. fern
c. water lily	d. paddy

3. Answer the following questions.

- 1) Write five examples of living things and non-living things.
- 2) How many groups of vertebrates are there ?
- 3) Classify the plant into three groups based on the size and stem.
- 4) How do people depend on plants?
- 5) Write three differences between plants and animals.

4. Make a list of the characteristics of each animal below.

Animal	Where they live	What they are covered with	How they move
Cow			
Doel			
Rui			
Lizard			
Turtle			



Chapter 3

Different Types of Matter

1. Matter

There are many different things around us. Among these there are tables, chairs, books, marble, bricks, buildings, hills and many other things. Beside these there are soil, water, air etc.

QUESTION: What are things made of?



Activity: Materials of Things

What to Do:

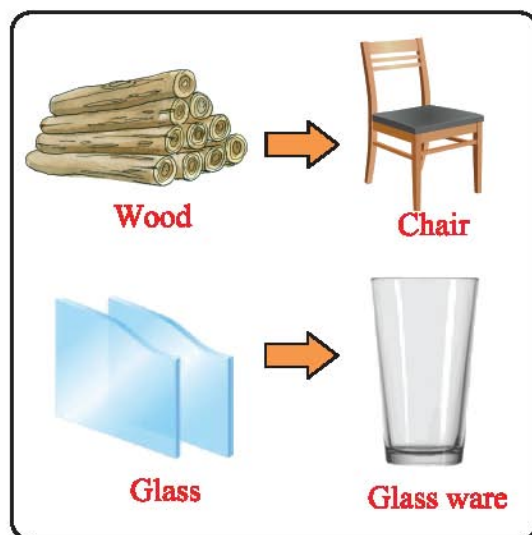
1. Make a table like the one shown below.
2. Make a list of things in or outside the classroom and its materials in the table.
3. Share your ideas with the class.

Name of thing	Materials
Desk	Wood, nails



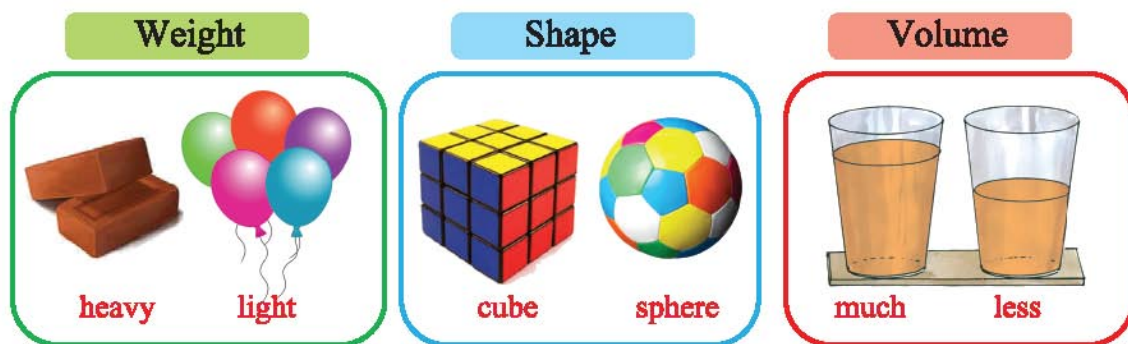
What is matter?

All things of the earth are made of matter. Things such as pencil, chair, table, water glass and blackboard are made of matter. A chair is made of wood and a water glass is made of glass. Matter has weight and takes up space.



Properties of matter

All matters have some common properties. Weight, shape, size and volume are properties. All matters have weight and occupy space. Some are heavy but others are light. Some are round or square. Some are soft or hard.



Discussion

◆ What are other properties of matter ?

1. Make a list of other properties of matter.
2. Share your ideas with the class.



2. Forms of Water

(1) Change in Forms of Water

Water is also a matter. When an ice cube is left in a warm room, it becomes water. When water is heated, we can find steam and bubbles.


QUESTION: How does water change its form?



Activity: Change of state in water.

What to Do:

1. Make a table like the one shown below.
2. Boil water with a kettle.
3. After boiling the water, observe the spout of kettle, and sketch your findings in the table.
4. Place a dry spoon in steam for a while.
5. Then take it out of the steam and let it cool down.
6. Check the surface of the spoon and record your observation in the table.

	Your finding
Around the spout of kettle	
Surface of spoon	



Don't touch the kettle! It is very hot.
Don't put your face close to the kettle! Steam is very hot!



Discussion

1. Think about the following questions, from your observation.
 - What is steam made of?
 - Why do you think so?
2. Share your ideas with the class.



Result

When a spoon cools down, there are some drops of water on it. We find that steam is made of water.



After placing
a spoon in steam

Summary

When water is heated, bubbles rise through the water. This is called boiling. Bubbles are water which change into an invisible form. This is called water vapour. When water vapour cools down in the air, it changes into visible particles of water. That is called steam. Steam becomes water vapour in the air again, and then disappears.

Water vapour
(It's invisible.)

Steam
(It's visible)

Water vapour
(It's invisible.)

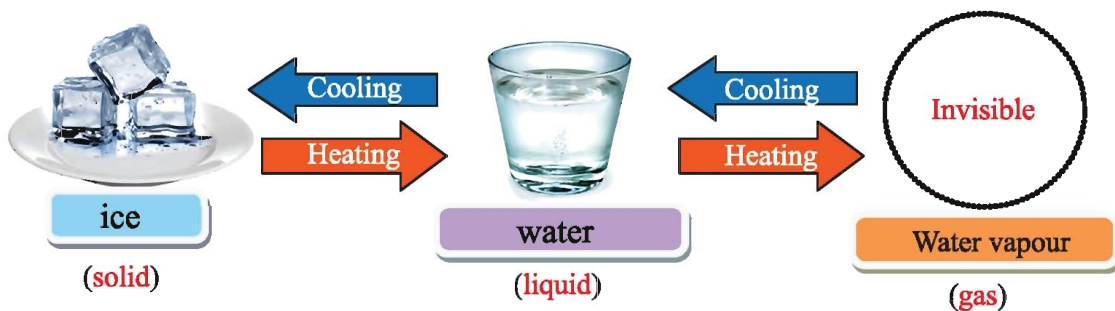


(2) Three Forms of Water

Water can change its form into water vapour, liquid water and ice by heating and cooling.

Water vapour is an invisible form of water. It is the **gaseous** state of water. When heat is added to liquid water, it changes into water vapour. As water vapour cools, it changes to liquid water. **Liquid water** is the form of water we know best. We use liquid water for drinking, washing, swimming, etc.

Ice is a frozen form of water. This state of water is called **solid**. When liquid water cools, it changes into ice. Ice changes into liquid water when heat is added.



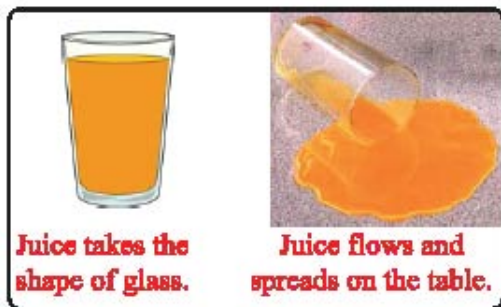
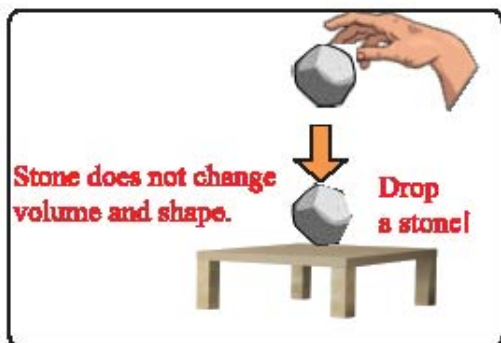
3. Three States of Matter

Matter is found in different states in our environment. Matter can be classified into three states - solid, liquid and gas.

Solid is a state of matter that has its own definite volume and shape. A stone is a solid. The stone does not change its volume and shape by itself. When we drop a stone, it still has the same volume and shape. Ice, tables and pencils are solid.

Liquid is a state of matter that has its own volume but does not have its own shape. Liquids flow and take the shape of any container. For example, juice will take the shape of the glass when we pour juice into a glass. Juice flows and spreads on the desk or floor when we spill it. Water, milk, tea and juice are liquids.

Gas is a state of matter that flows and has no definite shape or volume of its own. A gas always takes the whole space of a closed container. Air and water vapour are gas.



Discussion

1. Write two names of solid, liquid and gaseous matters in the table.
2. Share your ideas with the class.

Solid	Liquid	Gas



EXERCISES

1. Fill in the blanks:

- 1) Ice is the _____ state of water.
- 2) Water changes into ice by _____ .
- 3) Water changes into vapour by _____ .
- 4) All things are made of _____ .

2. Put a tick (✓) on the correct answer.

1) Which one is a solid?

- | | |
|----------|--------------|
| a. water | b. vapour |
| c. juice | d. ice cream |

2) Which one is a liquid?

- | | |
|--------------------|-----------------|
| a. oil | b. water vapour |
| c. bubble of water | d. ice |

3. Answer the following questions.

- 1) What are the three forms of water?
- 2) Explain what matter is.
- 3) Mention two differences between a solid and a liquid.
- 4) Write two properties of gas.
- 5) Name five liquids.

4. Match the sentence on the left with the related word on the right.

The matter that has definite volume and shape	Liquid
The matter that takes the whole space of a closed container.	Solid
The matter that has definite volume but does not have definite shape.	Gas
Water vapour are	



Chapter 4

Water for Life

Our Earth is covered with land and water. Almost three quarters of Earth's surface is water.



1. Sources of Water

We drink water. Plants and animals need water to survive. Water is very important for people.

QUESTION: Where can we get water from?



Activity: Sources of Water

What to Do:

1. Make a table like the one on shown the right in your exercise book.
2. Make a list of sources of water in the table.
3. Share your ideas with the class.

Sources of Water



When we feel thirsty, where can we get water for drinking?

Where do we swim?



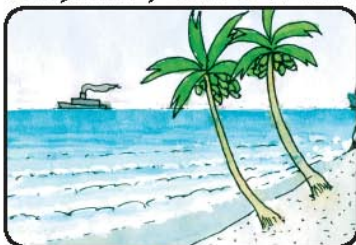
Summary

Water is found in many places around us. We can get water from rain, canals, rivers, lakes and the sea. We can get water from the tap and tube-well as well. These are called **sources of water**.

Sources of water can be classified into two groups; **natural source** and **man-made source**.

Natural sources of water

Sea, river, lake and rain are called **natural sources of water**.



Sea



Rain



River

Man-made sources of water

Well, tube-well, tap and pond are man-made sources of water.



Pond



Well



Tube well



Tap



Discussion

◆ Where does water come from?

1. Make a table like the one shown on the right.
2. Make a list of natural and man-made sources of water based on your table.
3. Share your ideas with the class.

Natural sources	Man made sources



2. Uses of Water

Water is very important and essential for life. When we feel thirsty, we drink water. When we cook food, we also use water.

People use water not only for drinking and cooking but also for other purposes.



Drinking water



Cooking foods

QUESTION: How is water used in our life?



Activity: Uses of Water

What to Do:

1. Make a table like the one on shown the right.
2. Make a list of uses of water in the table.
3. Share your ideas with the class.

	Uses of Water
1	
2	
3	



When do we use water?

I wash my hands and face, and brush my teeth in the morning.



Summary

People use water in many ways. People drink water and use it for cooking. They wash and clean with it.

Water is also used for agriculture such as growing crops and fish farming and in industries.



Irrigation of water in the paddy field



Fish farming

Saving of water

A natural resource is something from Earth that people use, e.g. air, water, rock and soil. There is a limit to natural resources on Earth. We have to save water because fresh water is very limited. We can save water while we brush our teeth and wash our hands.



Wasting water during washing clothes



Brushing teeth



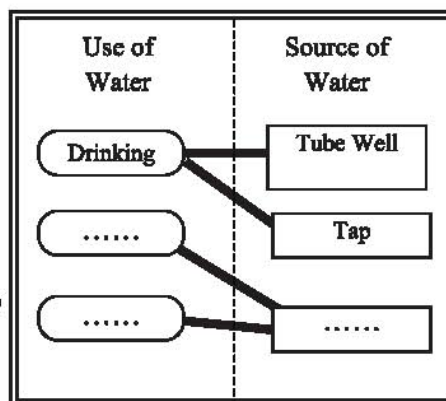
Turn off the tap while you brush your teeth.



Discussion

◆ What is the relation between the uses and source of water?

1. Make a chart like the one shown on the right.
2. Make a list of uses of water and sources of water in the chart.
3. Draw lines from the word in the left to the appropriate words in the right.
4. Share your ideas with the class.



3. Safe Water and Unsafe Water

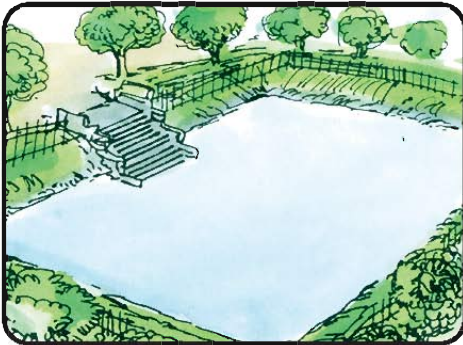
Some water is safe to drink, but some water is not safe. We need safe water for our daily life.

Fresh water and Salty water

We need fresh water for drinking, cooking and taking a bath. Fresh water is got from ponds, rain, wells, and tap. Salty water is found in the sea.

Some fresh water is safe for people. Safe water is water such as boiled water, well-filtered water and tube-well water. Some fresh water is not safe for people such as water from ponds and rivers which are polluted.

Unsafe Water



Pond



River

Safe Water



Boiled water



Tube-well water



Filtered water



Arsenic-contaminated water

Some tube-wells in Bangladesh contain harmful substances like arsenic. Arsenic-contaminated water is not safe for people to drink or use. It may cause skin diseases and cancer.

Arsenic-contaminated water does not have a specific taste, odour or colour. How can we identify a safe tube-well from an unsafe tube-well ?

The water from tube-wells marked in **green** is arsenic-free. It is safe water. The water from tube-wells marked in **red** is arsenic-contaminated. It is not safe water. We should not use it for drinking or cooking.



Arsenic-contaminated
Water



Arsenic-free Water



Discussion

◆ Which water is drinkable or undrinkable ?

1. Make a table like the one below.
2. Make a list of “drinkable water” and “undrinkable water” in the table.
3. Share your ideas with the class.

Drinkable Water	Undrinkable Water



4. Water Pollution

QUESTION: What causes water pollution?



Activity: Causes of Water Pollution

What to Do:

1. Make a table like the one on shown the right.
2. Go out of the classroom with your exercise book and find a place where water is polluted, e.g. a pond or ditch.
3. List the harmful things you found in polluted water.
4. Share your ideas with the class.

The things you found in polluted water

Summary

Water pollution happens when harmful things get into the water. Putting trash, oil, and harmful waste into water cause water pollution. Polluted water contains waste and harmful matters. Polluted water causes disease such as diarrhoea, cholera, dysentery and typhoid if people drink it or bathe in it. Polluted water is unsafe for people.



Polluted water from factory



washing clothes and bathing cows in water

People can help clean up water pollution. They can pick up and clean up trash. They can stop putting harmful things into water.



Discussion

◆ How can we prevent water pollution?

- Share your ideas on prevention of water pollution with the class.



EXERCISES

1. Fill in the blanks.

- 1) Water is one of the _____ resources.
- 2) Water _____ happens when harmful waste gets into water.
- 3) Rain, rivers, lakes, seas and taps are called _____ of water.
- 4) Sea water tastes _____.

2. Put a tick (✓) on the correct answer.

- 1) What causes water pollution?

a. putting trash in water	b. riding a boat on it
c. fishing in water	d. cooking food with it
- 2) Which colour of tube-well provides safe water?

a. blue	b. yellow
c. green	d. red
- 3) Which one is safe water for drinking?

a. pond water	b. boiled water
c. river water	d. sea water

3. Answer the following questions.

- 1) For which purposes do we use water?
- 2) Write three causes of water pollution.
- 3) How can we prevent water pollution?
- 4) How can we prevent misuse of water?

4. Classify the following words into two groups in the table.

 filtered water, sea water, water from red tube well,
 water from green tube well, boiled water, pond water

Drinkable water	Undrinkable water



Chapter 5

Soil

We live on land. Trees grow on land. Cows, goats, hen and ducks are also live on land. The loose material covering much of the Earth's surface is called **soil**.

1. Components of Soil

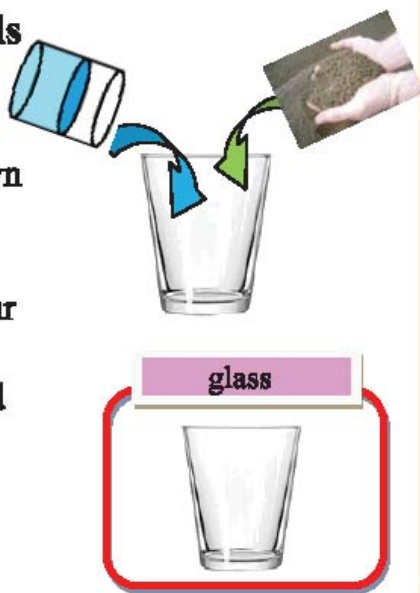
QUESTION: What is soil made of ?



Activity: Components of Soils

What to Do:

1. Draw a picture of a glass like the one shown below in your exercise book.
2. Go out of the classroom, and collect soil.
3. Put some soil into a glass cup and then pour water into it.
4. Observe what is happening in the glass and record your findings.
5. Stir it well and wait a few minutes.
6. Observe inside the glass and sketch your findings in the picture of a glass.



Summary

When we pour water into the soil, bubbles come out. We also find various components of soil in the glass. Soil consists of rocks, particles of sand, silt and clay, remains of dead plants and animals, water, air etc.



2. Types of Soil

Soil is classified into three groups: **clay soil**, **sandy soil** and **loamy soil**.

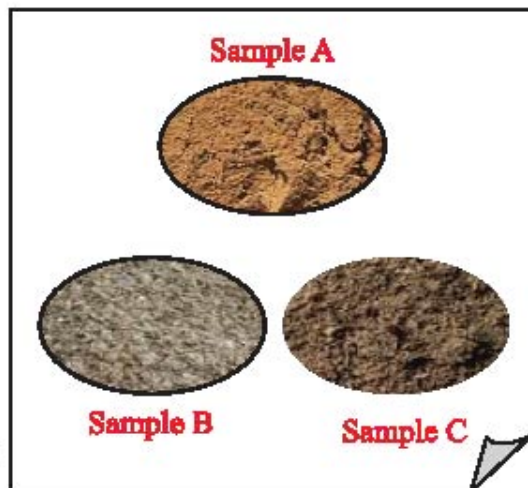
QUESTION: What are the differences between the three types of soil?



Activity: Comparing Properties of Soils

What to Do:

1. Make a table like the one shown below in your exercise book.
2. Place three types of soil samples on a sheet of paper.
3. Observe the soils and record the properties of the soils.
4. Share your ideas with the class.



Property	Sample A	Sample B	Sample C
its colour			
how it feels			
size of the particles			
any other property			



Summary

Soil can be classified by its colour, size of particles, and the substances it contains. The three main types of soil are clay soil, sandy soil and loamy soil.

Clay soil

Clay soil is often reddish in colour. It is sticky when wet, but smooth when dry. Clay soil has the smallest particles among the three soils.



Clay soil

Sandy soil

The colour of sandy soil is often pale brown or light grey. The size of sandy soil particles is larger than clay soil. It is dry and feels gritty.



Sandy soil

Loamy soil

Loamy soil is dark in colour. It feels coarse, soft and dry. Loamy soil contains various sizes of particles. Loamy soil is composed of a mixture of sand, clay and humus. Decayed remains of plants and animals form humus.



Loamy soil



Discussion

1. Make a table like the one shown below.
2. Make a list of their different characteristics in the table.
3. Share your ideas with the class.

	Clay soil	Sandy soil	Loamy soil
Colour			
Size of particles			
Others			



3. Soil and Crops

Are there any differences between sandy, loamy and clay soil for growing crops ?

QUESTION: Which soil is suitable for which crop ?

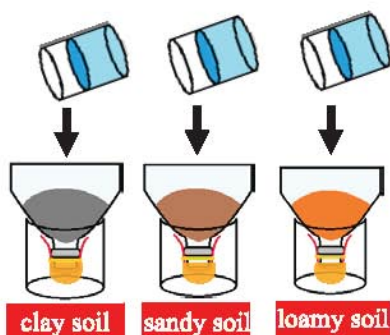
Water is very important for crops to grow. Crops grow in soil and get water from soil.



Activity: Water-holding Capacity

What to Do:

1. Collect sandy soil, loamy soil and clay soil.
2. Make a table like the one shown below.
3. Arrange three funnels like the figure in the right.
4. Put the same amount of each soil into each funnel and pour the same amount of water slowly into the funnels.
5. Observe how fast and how much water runs down each funnel.
6. Record your observations in the table.
7. Share your ideas with the class.



	Clay soil	Sandy soil	Loamy soil
How fast the water drains			
How much water drains			



Be careful not to cut your hands on the edge of the bottle funnels.

Think and Share

- ◆ Which soil can retain the water most ?
- ◆ Why do you think so?



Summary

Clay soil

The particles of clay soil are the smallest and more compact among the three types of soil. Due to the tiny size of the particles, water drains slowly through clay soil. Thus, clay soil can retain water and is suitable for better plant growth. Legumes and jackfruit grow well in this soil.



Legumes



Jackfruit

Sandy soil

Sandy soil has the largest size particles among the three types of soil. Water can pass through sandy soil quickly. This soil is suitable for growing watermelon, groundnut, small size melon or cucumber.



Watermelon



Groundnut



Cucumber

Loamy soil

Loamy soil is a mixture of sand, clay and humus. Due to the properties of sand and clay, it has a tight hold on water but it drains well. Paddy, wheat, maize, barley, jute, or sugarcane grows well in this soil. Most areas in Bangladesh are made up of loamy soil.



Paddy



Wheat



Jute



EXERCISES

1. Fill in the blanks.

- 1) Soil is classified into three types; clay soil, sandy soil and _____ soil.
- 2) The soil which has the largest particles is called _____ soil.
- 3) The soil which consists of sand, clay and humus is called _____ soil.

2. Put a tick (✓) on the correct answer.

- 1) In which type of soil can jack fruit and legumes grow well?

a. sandy soil	b. loamy soil
c. clay soil	d. salty soil
- 2) In which type of soil can water melon and groundnut grow well?

a. salty soil	b. sandy soil
c. clay soil	d. loamy soil

3. Answer the following questions.

- 1) Why do crops grow well in loamy soil ?
- 2) What are the characteristics of sandy soil ?
- 3) Mention two differences between loamy soil and clay soil.

4. Match the words on the right with the related words on the left.

clay soil	humus
sandy soil	water melon
loamy soil	jackfruit
decayed remains of plants and animals	paddy



Chapter 6

Air

Air is a component of the natural environment. Plants and animals need air to survive. What is air ? Why do we need air ?

1. Air around us

We are surrounded by air but we cannot see air.

QUESTION: How do we know that air is around us?



Activity: Feeling and Finding Air

What to Do:

Part 1:

1. Catch air with a plastic bag, and tightly tie the top of the bag with a string.
2. Toss, push, hit and move the bag with air.
3. Describe what you feel in your hand or body as you do this.



Part 2:

1. Put the plastic bag with air in a bucket of water as shown on the right.
2. Loosen the top of the bag to release the air.
3. Describe what you observe.



Summary

We cannot see air. But we can feel it when tossing, pushing, and moving a bag with air. We can see bubbles when we release the air in the water. We can also feel and find air when we use a hand fan. We know there is air because branches and leaves of trees move. What other situations tell us that air is around us?



We can find air as bubbles



Riding a bicycle



Air can move pieces of papers



Discussion

◆ When do you feel or find air ?

1. List five situations when you can feel air in your daily life.
2. Share your ideas with the class.

Importance of air

Air is everywhere. People, animals and plants breathe air. Plants use air to make food. So, air is very essential for living things to survive.



Use of air

People use air in many ways. Air is used to fill up tyres of bicycle and cars. Air makes the sailboat move across the water. We also use air to cool ourselves on a hot day. Moving air helps wind turbines to make electricity.

People need air to survive.



Tyre



Sailboat



Wind mill



2. Components of Air

QUESTION: What is air made of?



Activity: Burning in Air

Preparation:

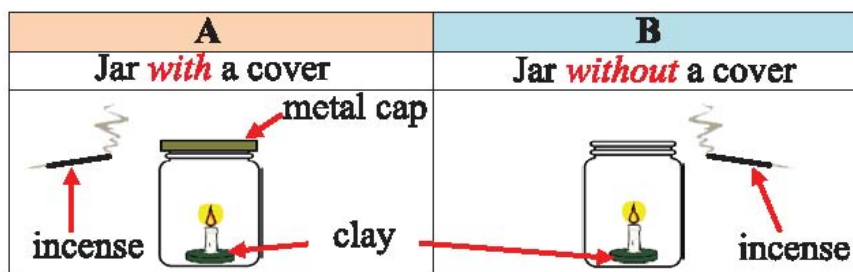
Two jars with caps, two small sized candles placed on a piece of clay, incense and matches.

What to Do:

1. Make a table like the one shown below in your exercise book.

Jar	What happened to the candle?	How did the smoke move?
A		
B		

- Put the candle at the bottom of each jar.
- Light the candles, and let the candles burn for a while.
- Cover Jar A, but do not cover Jar B.
- Let one student hold a lighted incense close to the top of Jar A. Let another student hold another incense near Jar B as shown below.



⚠ Do not touch the candle and glass bottle while the candle is burning.

- Observe the candle in each jar and find the direction of the smoke from the incense.
- Record your observations in the table.





Discussion

◆ Based on the table you made, think about the following questions by yourself and share your ideas with the class.

- 1) What happened to the candle in Jar A ?
- 2) What happened to the candle in Jar B ?
- 3) In which direction incense smoke of jar A went away?
- 4) In which direction incense smoke of jar B went away?

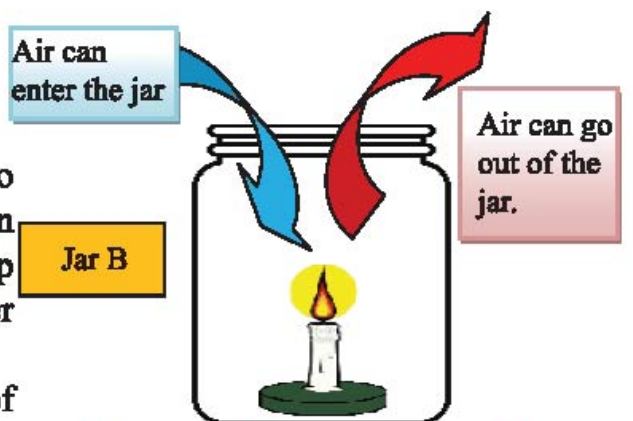
Summary

Air is necessary for a candle to keep burning. The candle in an open container can keep burning because air can enter the jar.

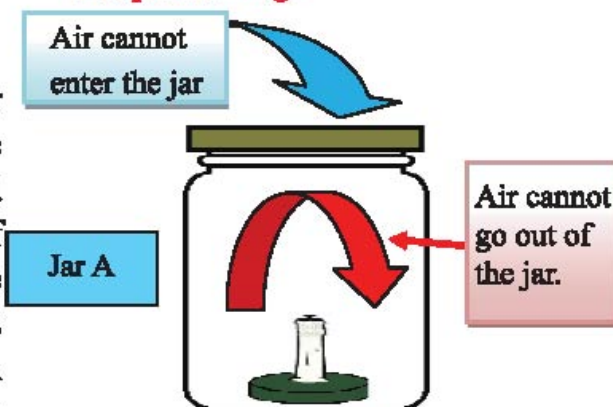
Air contains many kinds of gases. A gas in the air that can help something to burn is called **Oxygen**.

The candle in a closed container cannot keep burning because oxygen in the container is used up. Instead, the amount of another gas in the air in the container increases. The gas is called **Carbon dioxide**. Carbon dioxide cannot help something to burn.

Air is made up of various kinds of gases. There is Nitrogen, Oxygen, Carbon dioxide and water vapour.



The candle in an open container keeps burning.



The candle in a closed container cannot keep burning.



3. Use of Gas in Air

Various components of air are used in our life.

Oxygen

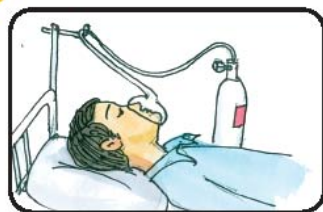
Most living things need oxygen. When plants make food they give off oxygen into the air. Animals breathe it in to survive. Additional Oxygen is needed for those who have difficulty of breathing in a hospital.

Oxygen



Giving off oxygen

Carbon Dioxide



Patient receiving oxygen through a mask

Carbon dioxide

Plants need carbon dioxide to make their own food. Carbon dioxide is also used in fire extinguishers as it does not help burning. Carbon dioxide is added to soft drinks such as sodas to give it a fizz.



soft drink



Extinguish the fire

Nitrogen

The fertilizer that is added to plants to make them grow well contains nitrogen. Nitrogen is used in preserving foods such as a bag of potato chips. It is also used in making light bulbs.



Bag of Potato chips



Fertilizer



Discussion

◆ How do we use gas in the air in daily life?

1. Make a list of the uses of each gas in the air in the table on the right.
2. Share your ideas with the class.

	Use of gas in daily life
Oxygen	
Carbon dioxide	
Nitrogen	

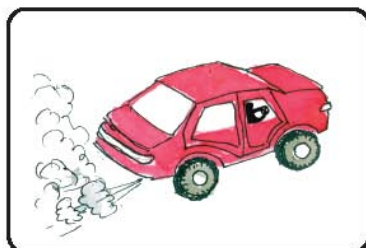


4. Air Pollution

Air pollution occurs when gases, dust, smoke or odour are introduced into the air. Air pollution is harmful to living things. It makes people sick, such as respiratory illness and heart disease.

Causes of air pollution

Harmful things in the air come from a variety of sources. Gas emitted by cars, dust and smoke from fires and factories cause air pollution. Smoking cigarettes is not only bad for the health but contributes to air pollution. Throwing garbage or urinating anywhere spread bad odour in the air cause air pollution.



Smoke from cars



Smoke from burning



Smoke from factory

Preventing air pollution

Plants, animals and man need clean air. We can keep the air clean by preventing pollution. Walking or riding a bicycle instead of using a car can help prevent air pollution. Reducing waste or garbage can cut down air pollution. Air pollution also can be reduced by stopping the emission of black smoke from cars.



Walking and riding a bicycle help to prevent air pollution



Discussion

◆ How can we help prevent air pollution?

1. Make a table like the one shown on the right.
2. Make a list of how you can help prevent air pollution in the table.
3. Share your ideas with the class.

What can we do?



EXERCISES

1. Fill in the blanks.

- 1) Black _____ from cars causes air pollution.
- 2) In an electric bulb _____ gas is used.
- 3) To stop fire _____ gas is used.
- 4) _____ is used to fill out tyres of cars.
- 5) Walking or riding a bike can help prevent _____.

2. Put a tick (✓) on the correct answer.

- 1) How do plants use carbon dioxide ?
 - a. to make food
 - b. to grow
 - c. to have more flowers
 - d. to produce fruit
- 2) Which gas in the air is necessary for animals to breathe ?
 - a. carbon dioxide
 - b. oxygen
 - c. nitrogen
 - d. water vapour
- 3) What is the component of fertilizer that makes plants grow healthy ?
 - a. carbon dioxide
 - b. oxygen
 - c. nitrogen
 - d. water

3. Answer the following questions.

- 1) Give at least three examples to prove that air is around us.
- 2) Name four components of air.
- 3) Describe three ways to prevent air pollution.

4. Match the words on the right with the related words on the left.

fertilizer	
extinguisher	oxygen
animals for breathing	carbon dioxide
bag of potato chips	nitrogen
soda (soft drink)	



Chapter 7

Food

We eat plants and animals as food. What sort of food do we need? Why do we need food to survive?

1. Food and Nutrition

QUESTION: What kind of food do we eat?



Activity: Classification of Food

What to Do:

1. Make a table like the one shown on the right in your exercise book.

Food from Animals	Food from Plants

2. Sort the foods in the pictures below into two groups in the table.



Ghee



Eggs



Potatoes



Milk



Rice



Cauliflower



Roast chicken



Bread



Summary

We eat different foods. These come from different sources. Beef, chicken, fish and egg are foods from animals. Ghee, butter and milk also come from animals. We eat rice, potato, bread and vegetables as food. Bread is made from flour. Flour is made from wheat. These foods come from plants. We also eat fruits such as jackfruits, mangoes, berries bananas and oranges.

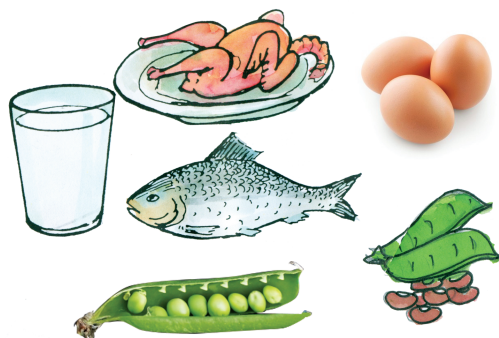
Living things get the energy they need from food. We also eat food to get energy. Food gives us energy to survive and grow. Substance that living things need in order to survive and grow is called Nutrient. We get it from food.

Nutrition

Our food contains various kinds of nutrition. There are major elements such as **proteins**, **carbohydrates** and **fat** and minor elements such as **vitamins** and **minerals**. These elements are absorbed in the body.

(1) Proteins

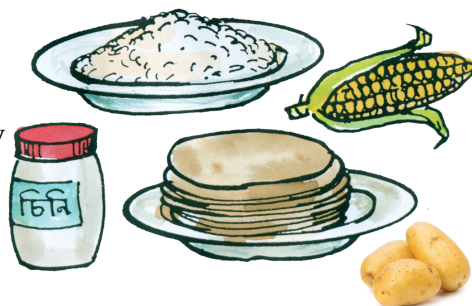
Protein makes our body. Protein is needed to build, repair and maintain muscle and blood. Meat, fish, eggs, pulses and beans contain plenty of protein.



Protein contained foods

(2) Carbohydrates

Carbohydrates are richly contained in the grain groups; rice, wheat and maize. Carbohydrates provide energy for doing work.

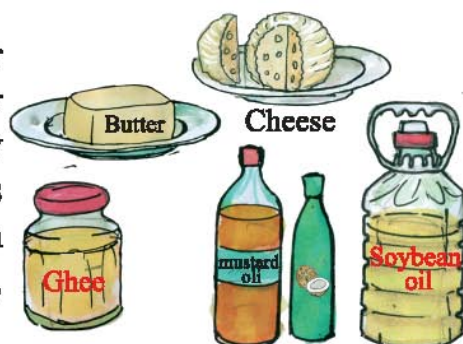


Carbohydrate contained foods



(3) Fat

Fat provides energy and keeps our bodies warm. Fat also makes our body. Fat is mainly contained in dairy products such as ghee, butter, curds etc. Fat is also contained in oil which comes from plants such as soya bean, mustard and coconut.

**Fat contained foods****(4) Vitamins and Minerals**

Vitamins and minerals help our body to work properly and stay healthy. Vitamins and minerals protect us from diseases. They are richly contained in fruits and vegetables.

**Vitamin & Mineral rich foods****Water**

Water is not a nutrient but adequate safe water is needed for digestion and absorption of foods in our body.

**Discussion**

1. Make a list of the function of the nutrition in the table below.
2. Share your ideas with the class.

Nutrition	Function
Protein	
Carbohydrate	
Fat	
Vitamin & Mineral	



2. Balanced Diet

We may become sick if we do not eat different kinds of food in proper amounts. What kind of food should we eat to keep our body healthy?

The food containing all the essentials for our body in the required quantity is called a **balanced diet**. The balanced diet is prepared by mixing various types of food. Protein, carbohydrate, fat, vitamin and mineral should be present as per requirement.

QUESTION: What is the balanced diet for good health?



Activity: Menu of a Balanced Diet for a Dinner

What to Do:

1. Make a table like the one shown below.
2. Choose one or two foods from each group in the table below.
3. Make a list of a well-balanced diet menu for dinner.

Group	Food
Protein	
Carbohydrate	
Dairy Product	
Vegetables	
Fruits	

Source of Diet				
Protein group	Carbohydrate group	Dairy Product group	Vegetable group	Fruit group
Fish	Rice	Milk	Lalshak	Mango
Beef	Coarse flour	Yogurt	Puushak	Jackfruit
Poultry	(Atta)	Cheese	Arum leafs	Orange
Mutton	Potato	Doi	Carrot	Guava
Eggs	Maize	Ghee	Pumpkin	Hog plum
Beans		Butter	Radish	Apple
Seeds			Cauliflower	Watermelon
			Cabbage	





Discussion

◆ How can we prepare a balanced diet?

1. Share your ideas about the menu for dinner you made in your group.
2. Choose the best menu for dinner among the class.
3. Discuss why the menu is the best in the class.

Summary

A well-balanced diet is very important for us. It keeps us healthy and strong. The body grows well and the risk of diseases becomes less.

We get proper nutrition by eating a variety of foods. There is no single food which contains all kinds of nutrition. We can still be unhealthy if we do not eat the right kinds of different foods we need.



Balanced diets

A reasonable balanced diet

Many people believe that costly foods have greater nutritional value. But it is not true. All foods contain nutrition regardless of the price. Though the source and price of food are different, the nutritional value may remain almost the same. There is no difference in nutritional value between local and foreign food. The characteristics of nutritional elements are also the same. The important thing is to select the right kind of food considering our age, the work that we do, and how fast we are growing.



Me and mother will buy local vegetables from the market and cook shobji for dinner.

Me and father will eat shobji for dinner at a restaurant.



Which dinner has more nutritional value?



3. Fruit

Eating fruits is good for health. We have plenty of fruits around us.

QUESTION: What kind of fruits are there in different season?



Activity: Classification of Seasonal Fruits

What to Do:

1. Make a table like the one shown below.

Summer Fruits	Winter Fruits	Fruits throughout the year

2. Sort fruits in the figure below into three groups; **summer fruits**, **winter fruits**, and **fruits throughout the year**.



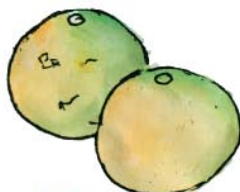
Papaya



Banana



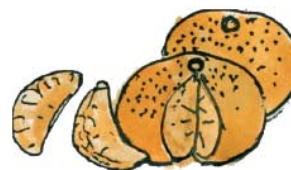
Coconut



Wood apple



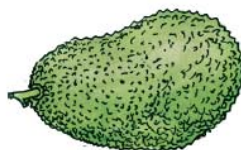
Boroi



Orange



Guava



Jack fruit

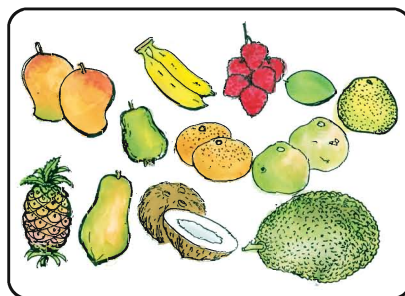


Mango



Summary

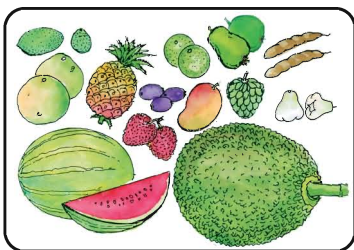
Fruits are rich in vitamins and minerals. Fruits provide nutrition which is vital for our health and protects us from diseases. We eat many kinds of fruits such as apple, grapes, mango, jackfruit, banana, watermelons and orange. We get some fruits in the summer, others in the winter or throughout the year.



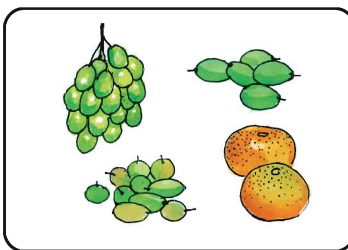
Various types of fruits

Seasonal fruits

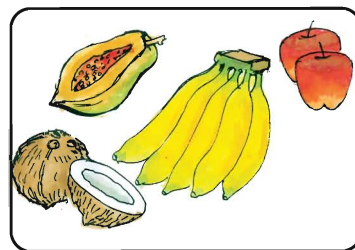
Fruits can be classified based on the seasons of the year in which they grow such as **summer fruits**, **winter fruits** and **fruits throughout the year**.



Summer fruits



Winter fruits



Fruits throughout the year

(1) Summer fruits

The notable summer fruits are – mango, black berry, lichi, jackfruit, guava, hog-plum, pineapple, lemon, etc.

(2) Winter fruits

Fruits do not grow much in the winter. Among them, orange, jujube (boroi) and olive are the main winter fruits.

(3) Fruits throughout the year

In our country some fruits grow throughout the year such as papaya, banana and coconut.

A list of seasonal fruits is given in the table below.

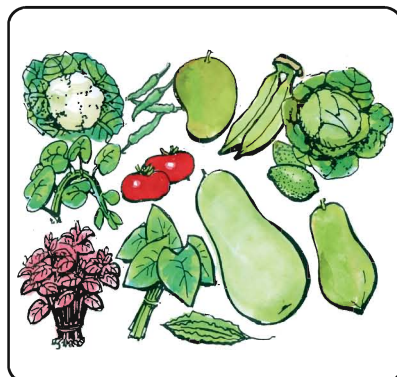
Seasonal Fruits		
Summer fruits	Winter fruits	Fruits throughout the year
mango, lichi, lemon, hog plum, guava	olive, jujube, orange	papaya, banana, coconut



4. Vegetables

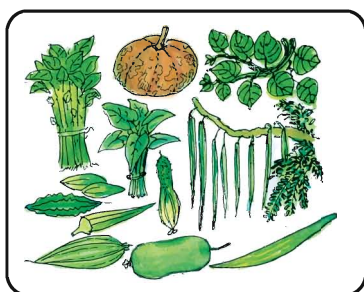
Vegetables are rich in vitamins and minerals. Eating vegetables is good for health. People who eat more vegetables are likely to reduce the risk of some diseases. There are many kinds of vegetables such as tomato, cauliflower, cabbage, potato and carrot.

We get some vegetables in the summer, others in the winter or throughout the year.

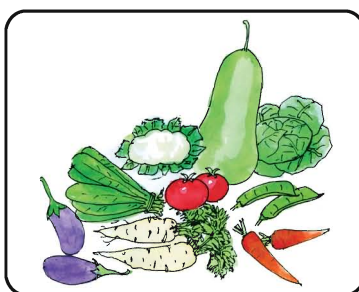


Seasonal vegetables

Vegetables in Bangladesh can be classified into **summer vegetables**, **winter vegetables** and **vegetables throughout the year**.



Summer vegetables



Winter vegetables



Vegetables throughout the year

(1) Summer vegetables

Various vegetables grow in summer. Such as potol, karolla, ladies fingers, kakrol, jhinga, dhundul, cucumber, chal kumra, sweet gourd, pani kachu etc. Leafy vegetables are data shak, pui shak etc.

(2) Winter vegetables

In the winter, various types of vegetables grow in Bangladesh. Those include bean, radish, tomato, carrot, lettuce, cauliflower and cabbage. Leafy vegetables are palong shak and bottle gourd leaves.

(3) Vegetables throughout the year

Among this type of vegetables are brinjal, green banana and papaya. Leafy vegetables are lal shak, kolmi shak and kachu shak.



5. Preserving Food

By which ways we preserve food?

We eat various kinds of foods to survive and grow. Fresh foods make us healthy and provide us energy. But spoiled foods would make us sick and weak. Food spoils because of pests and microorganisms getting into food. We need to preserve food to stop spoiling.



Discussion

◆ How do we preserve food?

1. Make a list of how to preserve different kinds of food, vegetables, fish, meat and fruits in our house.
2. Share your ideas with the class.

Ways of preserving food

Spoilage of food can be stopped through preservation.

There are many ways to preserve food are as follows:

(1) Drying

Drying is the process of taking away the moisture by heating in the sun or an oven. This method works well for many types of foods, including fruit, vegetable, fish, meat, grain and pulses.

(2) Canning or Bottling

Canning is the process of heating food at a specific temperature for a specific period. The food is sealed in a closed container. Fruits, vegetables, fish, meat and some prepared foods are preserved in this way.

(3) Refrigeration

Refrigeration is the process of keeping food in a cold place. Refrigerator can be used for preserving many foods, especially vegetables, fruits, fish and meat. Pickling, salting and smoking are also other ways of preserving food.



Dried fish



Jelly



Pickles



Refrigerator



EXERCISES

1. Fill in the blanks.

- 1) We need _____ for surviving and growing.
- 2) Vegetables are rich in _____ and _____.
- 3) The major nutrients in our food are _____, _____ and _____.
- 4) _____ diet provides all sort of nutrients.

2. Put a tick (✓) on the correct answer.

- 1) What is the main function of protein?
 - a. to provide energy
 - b. to remove weakness
 - c. to prevent disease
 - d. to help the body formation and growth
- 2) Which one is the summer fruit?
 - a. banana
 - b. boroi
 - c. lichi
 - d. olive
- 3) Which one is rich in protein?
 - a. gourd
 - b. pumpkin
 - c. pulse
 - d. potato

3. Answer the following questions.

- 1) Why do we need to eat fruits and vegetables?
- 2) How do vitamins work for our body?
- 3) Why should we eat a balanced diet?
- 4) Give two examples of different ways of preserving food.
- 5) Explain what nutrition is.
- 6) Write the names of three fruits that grow throughout the year.

4. Match the words on the right with the related words on the left.

protein vitamin fat carbohydrate water	cheese rice disease prevention fish
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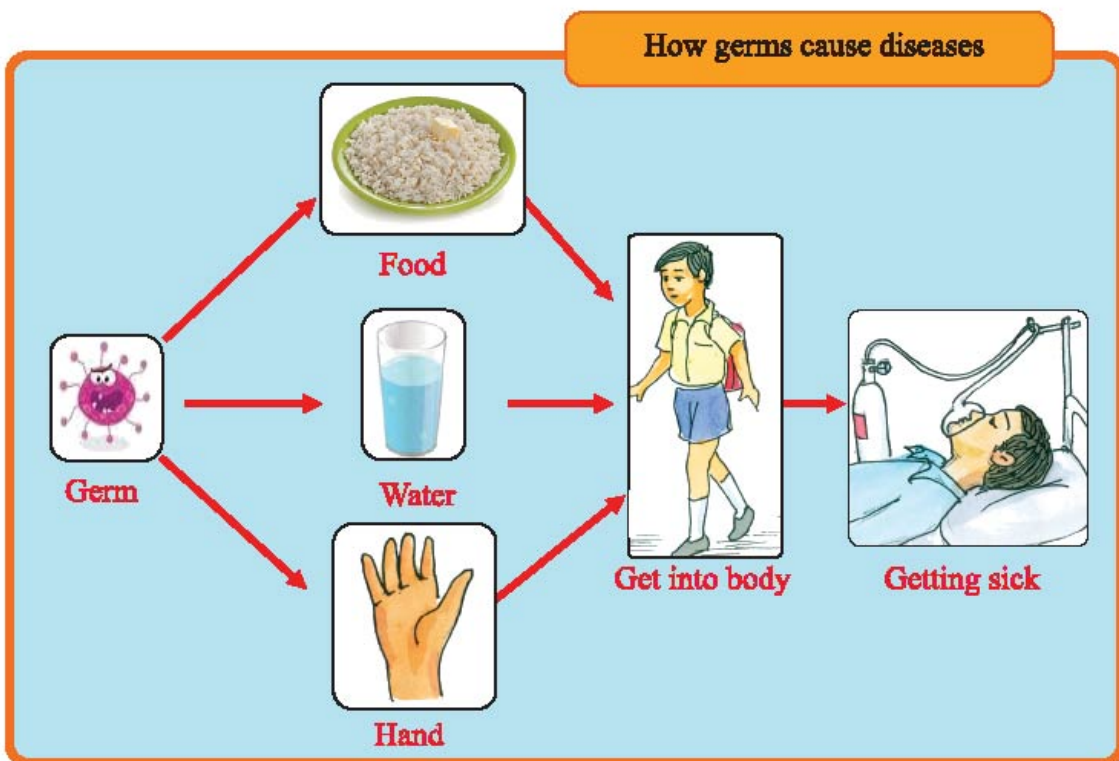
Hygiene

1. Health and Disease

We sometimes get diseases such as the common cold, diarrhoea, dysentery, typhoid, pox, cholera and tuberculosis. Why do we get diseases? How can we keep our body healthy?

(1) Disease

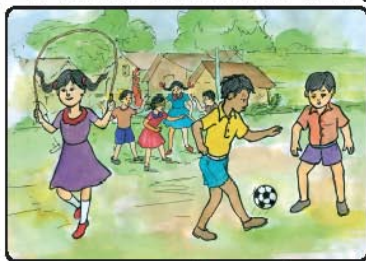
There are invisible germs all around us. Some germs cause diseases in people. These germs can get into our bodies when we drink or eat contaminated water or food. If we rub our eyes with dirty hands or put dirty hands in our mouth, germs can also get into our body. When germs multiply in our bodies we become ill.



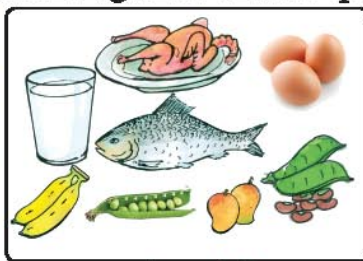
(2) Keeping our Body Healthy

Our body has a natural ability to fight against disease and destroy germs. Maintaining a healthy life is a good way to improve such ability.

A well-balanced diet can keep our body healthy. It is also useful to do moderate exercises and get enough rest and sleep.



Moderate exercises and sports



Balanced diet



Enough sleep

If we get a disease, we need to see a doctor and take medicine.

We also need to take rest, eat well and drink safe water to recover from diseases.



See a doctor



Take water and medicine



Discussion

◆ How can we stay healthy?

1. Make a list of your habits to keep yourself healthy.
2. Share your ideas with the class.
3. Make a list of rules for keeping body healthy.



2. Prevention of Disease

QUESTION: How can we prevent diseases?



Activity: Good Habits to Prevent Diseases

What to Do:

1. Make a table like the one shown on the right.
2. Make a list of good habits for preventing diseases in the table.
3. Share your ideas with the class.

Habits to prevent disease	
Example: Brushing teeth after meals	
1.	
2.	

Summary

Germs are everywhere. Each time we touch something such as a door handle, table or toilet we can pick up germs or spread germs. But, we cannot avoid touching everything. Germs can also spread through the air from person to person when an infected person sneezes or coughs. Germs can spread through insects such as mosquitoes and flies. The most important way of preventing diseases is to stop the spread of germs. Here are the good habits to stop germs spreading and prevent diseases.

Keeping the body clean

We need to take care of our body by keeping it neat and clean. We have to brush our teeth after meals and bathe with clean water and soap every day. We also need to clean clothes regularly. We need to care for our skin, hair, nails, eyes and ears to keep our body healthy.



Taking a shower



Brushing teeth

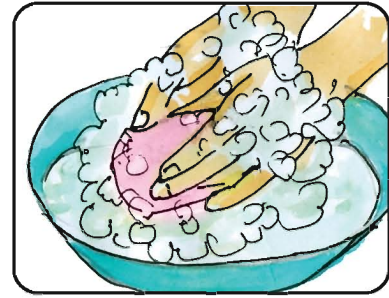


Clipping nails



Washing hands

Germs can get into our bodies when we touch our mouth, eyes or nose with dirty hands. Dirty hands can spread germs when we touch something. Washing our hands with soap and clean water is the best and simplest way to prevent disease. We have to wash our hands before eating and preparing foods, and after using the toilet.



Washing hands with soap



Drinking safe water

Using safe water

Polluted water causes disease. We need safe water to prevent disease. We have to use safe water to drink, to prepare foods and to wash our body. Safe water helps our body work properly and washes germs off, and keeps us healthy.

Cleaning the environment

We need to clean our surroundings to reduce the spread of germs. Regular cleaning with soap and water is one of the useful ways for removing germs. In our houses or schools, we have to wipe the benches, tables and chairs, and sweep the floor to keep it clean. We should put garbage such as kitchen wastes, paper and banana skin in dustbins or a specific place. We should also keep toilets neat and clean, because germs can spread through urine and stools. We have to use toilets properly and wash our hands with clean water and soap.



Cleaning a classroom



Using a sanitary latrine



EXERCISES

1. Fill in the blanks.

- 1) We may get sick when _____ enter into our body.
- 2) To keep good health we need to eat _____.
- 3) We should put garbage or waste in _____ or specific places.
- 4) If we do not keep our body neat and clean, we will get _____.

2. Put a tick (✓) on the correct answer.

- 1) What is a good habit to avoid getting sick ?

a. eating lots of food	b. washing hands
c. sleeping late	d. eating uncovered food
- 2) What is an important way to maintain good health?

a. taking enough sleep and rest	b. working hard
c. taking a lot of medicine	d. eating too much

3. Answer the following questions.

- 1) What should you do after using toilets ?
- 2) Mention two ways to keep the environment clean.
- 3) Explain how to wash your hands properly.
- 4) Give four good habits to prevent diseases.
- 5) Where are germs found ?
- 6) Why do we need a clean environment to stay healthy ?

4. Use arrows in the figure below to show the ways of spreading germs.



Chapter 9

Energy

Energy comes in different forms such as light, electricity, and heat. We use energy in everything we do. Can you find the uses of energy in the picture below?



1. Energy in Our Life

QUESTION: How do we use energy?



Activity: Uses of Energy

What to Do:

1. Make a table like the one shown on the right.
2. List the uses of energy in the table.
3. Share your ideas with the class.

When do we use energy?



I use energy when I study at night.

I use energy when I watch TV.



Summary

We use light, electricity and heat as energy in different situations.

Light

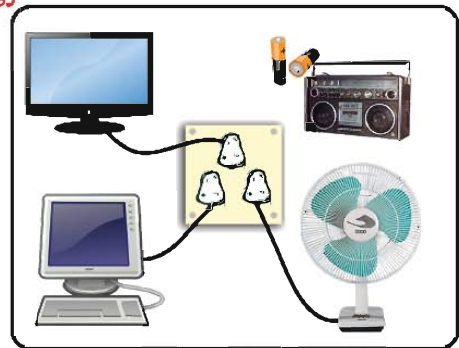
Light is energy that helps us to see. Without light, we could not see the things around us. We use light to make a room bright. We get light from fires, candles and many. The most powerful source of light energy is the Sun. Plants make food and oxygen by using sunlight. Without sunlight, crops and other plants cannot grow.



Uses of light energy

Electricity

Electricity is a form of energy that we can use to run appliances. Electricity comes from batteries or outlets in our houses. We use electricity to turn on the light bulb and fan, to watch TV, to listen to the radio, and to play with toy cars. Like this, we also use electricity to run refrigerators or computers.



Uses of electricity

Heat

Heat is energy that makes things warm. We use heat energy in cooking food, drying clothes and keeping warm. We can get heat energy from burning wood, coal, oil and gas. We can produce heat by rubbing two things such as our hands. The Sun is a powerful source of heat. The Sun warms air, water, and land on the Earth.



Use of heat energy



2. What is Energy?

Energy is the ability to do things. When we turn on a radio, we can listen to news or music. We can boil water and cook food by using fires.

QUESTION: What can energy do?



Activity: What Energy Do

What to Do:

1. Make a table like the one shown on the right.

	What happens
Activity1	
Activity2	

Activity 1:

1. Prepare a candle on a desk.
2. Make the room dark, and then light the candle.
3. Observe what happens to the room and the candle.



Activity 2:

1. Bring your hand close to the lighted candle.
2. Describe what you feel on your hand, in the table.



**Do this activity with your teacher.
Do not touch the flame.
Be careful while using fire.**



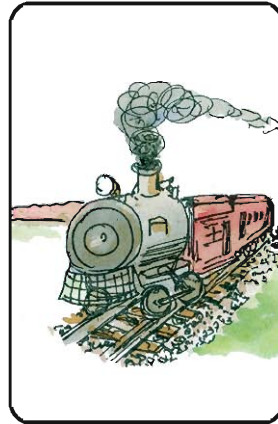
Summary

Electricity can light a lamp and make the room bright. When we bring our hands close to the light, we feel warm. This means that light can produce heat.

Energy can mainly do four things, **move something**, **make a sound**, and **produce light and heat**.

Moving something

Energy can move something. Fans spin around by using electricity. A toy car can also move by using the electricity of a battery. Heat energy can move something as well. When we heat the water, steam comes out. Steam trains and ships can move by using the power of steam.



Steam train



Playing with a toy car

Producing light

Energy can produce light. A lamp and torch give off light by using electricity. When we turn on the TV, we can see images because the TV emits light. Heat-energy can also produce light. When we burn a matchstick, we get both light and heat.

Producing heat

Energy can make heat. Electric lamps give off light as well as heat by using electricity. Burning candles give off light and heat as well. Electrical energy can also produce heat. When we iron clothes, we use the heat produced by electricity.



EXERCISES

1. Fill in the blanks.

- 1) Heat, electricity and light are _____.
- 2) Television runs using _____ energy.
- 3) Plants prepare their food by using _____.
- 4) We get _____ and _____ by burning a match stick.

2. Put a tick (✓) on the correct answer.

1. Which one is energy?
 - a. television
 - b. fan
 - c. light
 - d. pen
2. Which one runs by using electricity?
 - a. push cart
 - b. radio
 - c. the Sun
 - d. steam engine

3. Answer the following questions.

- 1) Make a list of what energy can do.
- 2) Name the different forms of energy.
- 3) Explain how light energy is used in our life.
- 4) Explain how electricity is used in our life.
- 5) Why do we rub our palms when we feel cold ?

4. Match the words on the right with the related words on the left.

heat	light, heat and electricity
candle	boiling water
energy	Sun
source of energy	producing light and heat



Chapter 10

Introduction to Technology

Look at the pictures below. What are they doing ? What are they using ?



When we write, we use a pen or a pencil. When we plough a field, we use a tractor. The tools in the pictures above are known as **technology**. **Technology** can be a piece of equipment, tool, device, machine, or method. It makes our work easier, better or quicker.

1. Technology in our Life

QUESTION: How do we use technology ?



Activity: Use of Technology in Our Life

What to Do:

1. Make a table like the one shown below.
2. Make a list of the “Name of technology” in the left column and “How do we use the technology” in the right column of the table.
3. Share your ideas with the class.

Name of technology	How do we use the technology?
Pen	We can write with it.



Summary

We use various kinds of technologies for different purposes in our life. When studying, we use technologies such as pencils, textbooks or exercise books. Teachers use blackboards, chalk or other instruments to teach.



Writing with a pencil



Reading a book

When we travel or carry goods from place to place, we use transport technologies such as a bicycle, car, bus, ship, or an aeroplane.



Bus

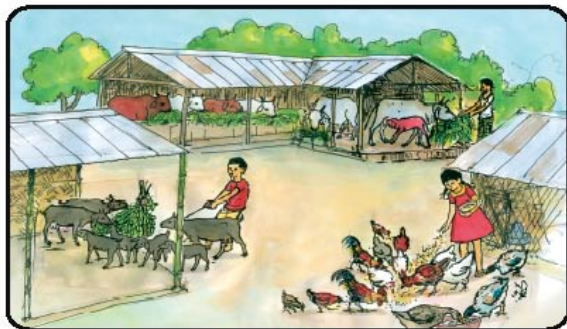


Ship

In agriculture, we use various kinds of tools such as a plough, spade, sickle or tractor for cultivation. We also raise livestock or farm fish by using different technologies.



Agricultural tools



Livestock and poultry farming

Technology is tied closely to our life. Technology makes our life more convenient and safe.



2. Development of Technology

Technology is always developing and improving. Improvements in technology make our life better and quicker.

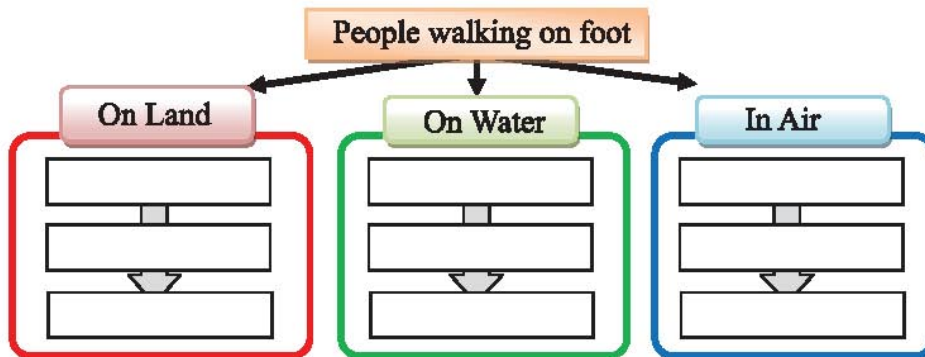
QUESTION: How has technology changed?



Activity: Changes of Transport Technology

What to Do

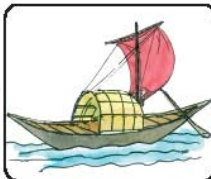
1. Make a diagram like the one shown below.



2. Classify the pictures below into 3 groups; transport technologies on land, on water and in air, and put them in order from oldest to newest.



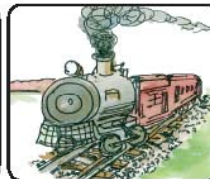
Helicopter



Sail boat



Space shuttle



Steam train



Bus



Aeroplane



Raft



Horse



Ship

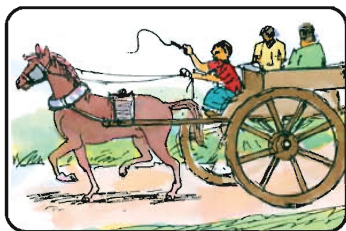


Summary

Technology is used in various ways in our life such as transport, study or agriculture.

Transport

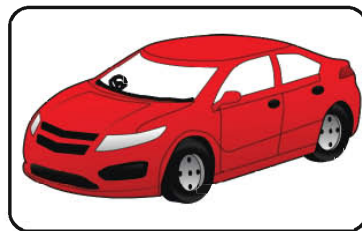
People invented transport technologies in order to move from place to place and carry goods farther and faster. Transport technologies can be classified into three modes; land, water and air. In ancient time, people used to travel on foot. Later on, people began to use animals such as horses or cows. After the invention of the wheel, transport technology changed drastically. At first, the horse cart and cow carriage was invented. After the invention of the engine, trains and cars were invented. The invention of the wheel and engine made it easier for people to travel and carry goods farther and faster.



Horse cart



Train

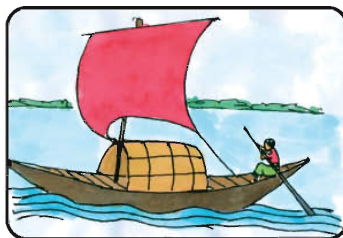


Car

As for water transport, people used to use rafts or boats to travel and carry goods across rivers, lakes or oceans. Then, people travelled on water with sail boats by using wind power. After the invention of the engine, cargo ships, speed boats and ferries were developed. These carry people and goods throughout the world.



Raft



Sail



Cargo ship



Aeroplanes and helicopters also travel in air. We can travel long distances in a short time through the air. Now, people can travel to the moon through space shuttle.



Aeroplane



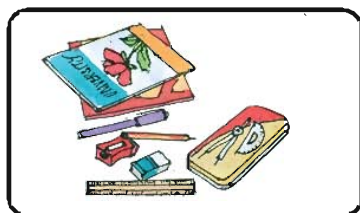
Helicopter



Space shuttle

Education

Educational technology can be traced back to the paintings on cave walls. People invented paper and began to write down messages or knowledge on paper. After that, people invented the printing press. Now we use educational technologies such as computers, projectors, internet, videos and cameras for teaching and learning.



Education materials



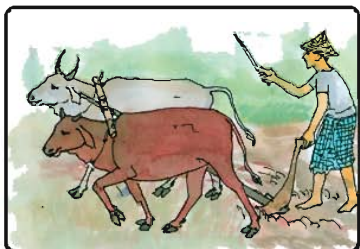
Computer



Printing press

Agriculture

The first agricultural revolution began many years ago. At that time, people invented various agricultural tools such as the shovel, spade, sickle, plough etc. People used animals such as cows or horses to plough fields. Now we use a tractor to plough fields and irrigation pumps for watering land. We also raise livestock such as cows, sheeps, goats and chickens, and farm fish for getting food.



Ploughing with animal



Tractor



Irrigation pump



EXERCISES

1. Fill in the blanks.

- 1) The plough is a technology used for _____.
- 2) The textbook is a technology used for _____.
- 3) Modes of transport can be classified into land, water and _____.

2. Put a tick (✓) on the correct answer.

- 1) Which one is modern technology?
a. spade b. plough
c. sickle d. tractor
- 2) Which technology came first?
a. pen b. paper
c. book d. printing press
- 3) Which one is a type of transport technology?
a. computer b. telephone
c. aeroplane d. tractor

3. Answer the following questions.

- 1) Explain, what technology is.
- 2) How does technology help us in transport ?
- 3) Why have people invented technologies ?
- 4) Write names of four technologies of education?
- 5) Write names of two ancient and two modern technologies of agriculture.

4. Match the words on the right with related words on the left.

reading	train
cultivation	plough
transport	pencil
writing	book
raising livestock	



Information and Communication

1. Ways of Collecting Information

Information is knowledge that we get about someone or something. We are always getting various kinds of information such as events, weather and news. How do you know when an examination begins? Where do you get information on today's weather from? When will Bangladesh attend their match in World Cup Cricket? Where can we travel in the summer vacation?

QUESTION: Where can we get information?



Activity: Sources of Information

What to Do:

1. Make a table like the one shown below.
2. Make a list of the “types of information” and “sources of information” in the table.

Name of Information	Where information comes from
Date of examination	school notice, teachers

3. Share your ideas with the class.



I usually watch TV to see the weather forecast. How about you?

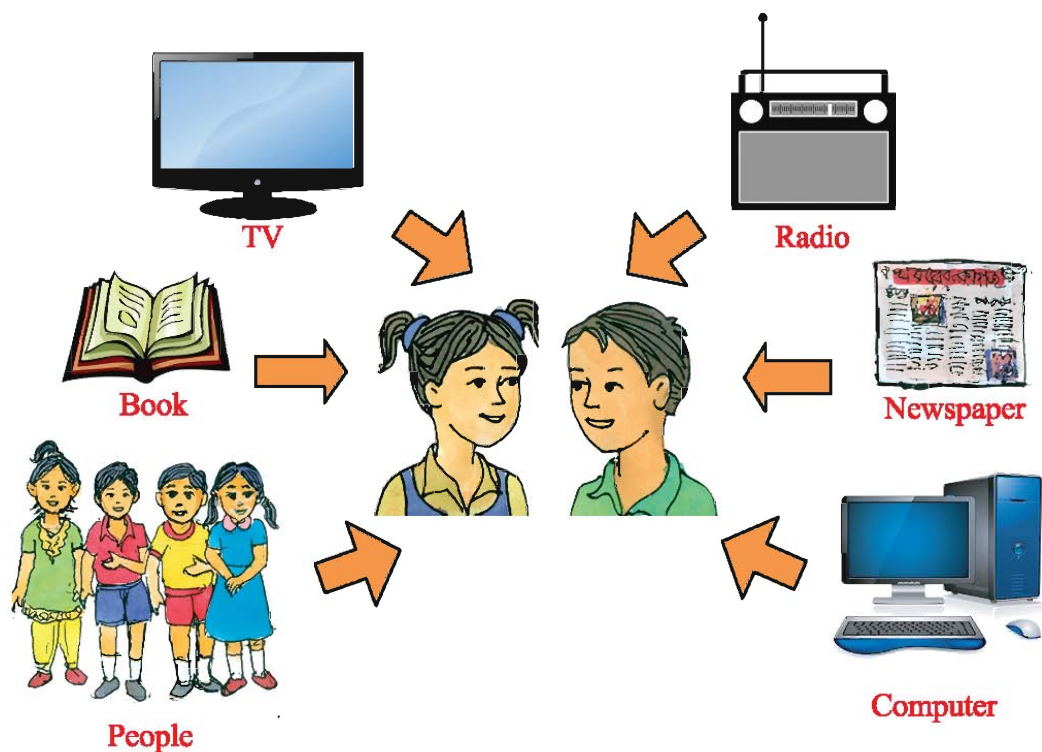
I sometimes listen to the radio to collect information on the weather.



Summary

Information comes from different sources such as the television, radio, newspaper and books. We get information on the weather from the television or radio. We learn a lot of things from textbooks. Nowadays, we can get information through the internet. Tools such as the television, radio and newspaper that are used to deliver information are called **media**. We also gather information from people through communication. We hear messages or experiences from parents or classmates.

Information can tell people something new or help them make a decision. Sharing information is also very important for our life. If you hear of a cyclone alert you should tell other people. If you do not share the information, people may suffer heavy damage from the cyclone. We should gather and share correct information for a better life.



2. Exchanging Information

People have developed various types of technology such as the newspaper, books, radio, TV and computer. We can get information and communicate with people by using technologies.

QUESTION: How can we communicate by using technology ?



Activity: Communication Tools

What to Do:

1. Make a table like the one shown below.
2. Make a list of “How to communicate with people” in the left column and “What technology you use” in the right column of the table.
3. Share your ideas with the class.

How do you communicate with people?	What technology do you use?



How can you keep in contact with your relatives living at a distant places?

I sometimes get letters from my uncle.



Think and Share

- ◆ How did early people used to communicate with each other?



Summary

Communication means exchanging information.

A long time ago, people communicated with each other by drawing or speaking. To communicate with people who lived far away, people went to see them or sent a messenger. People sent messages by using carrier pigeons, smoke signals or beating drum.



Sending message through carrier pigeon

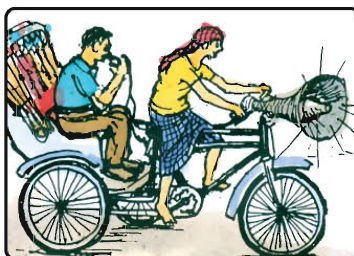


Beating a drum for communication

Now we use technology when we exchange information. We can talk with people by using land telephone or mobile phone even though we live very far from each other. We can exchange messages through e-mail. We can communicate with people by sending letters also. Our lifestyle will be more easier along with the advancement of technology.



Talking on the phone



Announcing through loudhailer



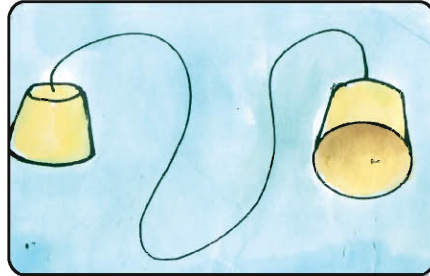
Posting a letter

Communication is important for exchanging information.



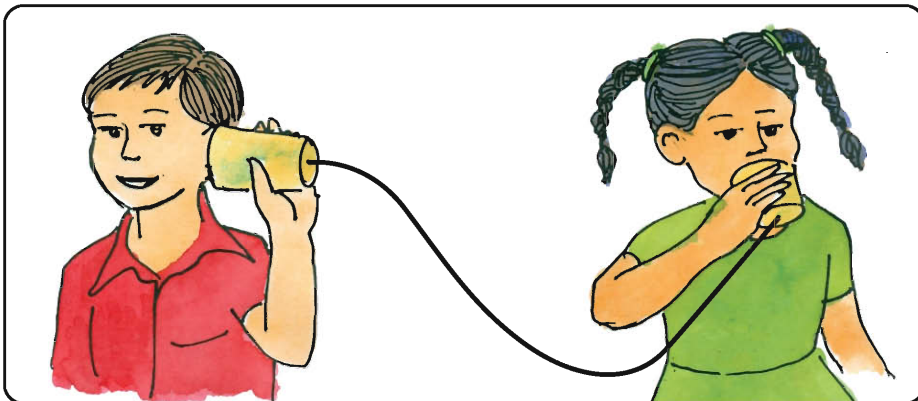
Try it!**Let's make a "Simple Telephone"****1. What you'll need:**

- ◆ Two paper or plastic cups, a sewing needle, string or wire (5m)

**2. How to make:**

- ◆ Make a small hole at the bottom of each cup and thread the string through each cup.
- ◆ Tie knots at each end to stop it pulling through the cup.
- ◆ Move into position with you and a friend holding the cups at a distance that makes the string tight.
- ◆ One person talks into the cup while the other puts the cup to their ear and listens.

✧ Can you communicate with each other?



EXERCISES

1. Fill in the blanks.

- 1) Tools such as TV to deliver information are called _____ .
- 2) Exchanging information is known as _____ .
- 3) _____ is knowledge that we receive by communication.

2. Put a tick (✓) on the correct answer.

- 1) Through which media can we exchange information at the same time?
 - a. radio
 - b. television
 - c. mobile phone
 - d. newspapers
- 2) What is the ancient way of sending information?
 - a. e-mail
 - b. pigeon
 - c. telephone
 - d. radio

3. Answer the following questions.

- 1) How can we exchange information with people who live far away?
- 2) Write five sources of information.
- 3) Why is it so important to know and share the information?

4. Match the words on the right with the related words on the left.

to watch and to listen	radio
to listen to news	newspaper
to read the news	telephone
to speak	television



Chapter 12

Population and Natural Environment

The number of people who live in the same area is called its **population**. Bangladesh has a very large population. According to the population census 2011 it is about 15 crore. It is increasing day by day.

1. The Impact of Population Growth on our Life

QUESTION: What happens to our life if population increases?



Activity: Impact of Population Growth on Food & Space

What to Do

1. Prepare a 5 metre rope and 5 cards with "Food" written on them.
2. Form a group of ten, and make a loop with the rope on the floor.
3. One student gets into the loop with 5 cards.
4. 2nd student gets into the loop and takes one card from the 1st student.
5. Continue the same process until 10th student gets into the loop.



5m rope



5 cards with "Food"



Think and Share

- ♦ What happened to the cards for each student and space in the loop as the number of students increased?



Summary

The more the population increases, the more food and space are needed. But food and space are limited. If the population continues growing, we will face some problems such as shortage of food to eat and space to live.

In fact, there is a shortage of food in some parts of the world due to the growing population.

People in a family also need food and space to live. If the number of people in a family increases, they need more food to eat and space to study and sleep. Also, it would be easy to get disease in a crowded house.



Enough space to sleep



Not enough space to sleep



Discussion

◆ “How can we make our family happy?”

1. Make a table like the one shown below.
2. Think about the following question.
 - ◆ What sort of problems do you face if the number of family members increases?
3. Share your ideas with the class.

What sort of problems do you face, if the member of a family increases?



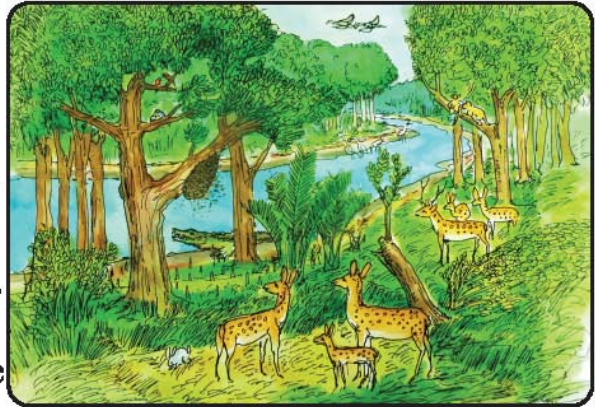
2. The Impact of Population Growth on the Natural Environment

People need food, water, shelter and clothes to live.

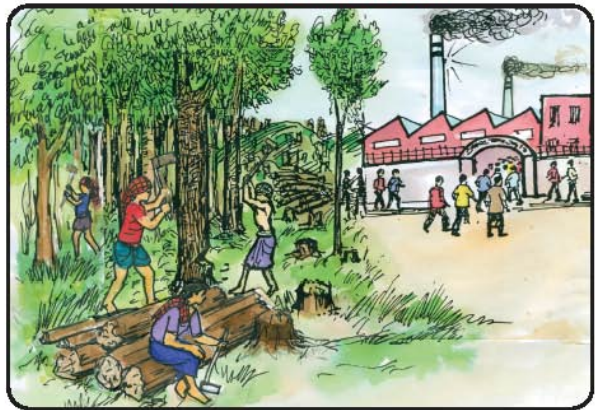
Food comes from plants and animals. Water comes from rain or rivers. Soil, rocks and woods are used to build houses and buildings. Some clothes are made of plant parts such as jute and cotton. Some shoes or bags are made of animal skins.

Those things such as plants, animals, water, and soil are called **natural resources**. We get natural resources from the natural environment.

When the population grows it needs more natural resources. People are destroying the natural environment to meet their additional needs.



People get natural resources from the natural environment



People are destroying the natural environment



Discussion

◆ What happens to the natural environment if the population increases ?

1. Think about the following questions.
 - ◆ How does population growth affect the natural environment?
 - ◆ How can we protect the natural environment?
2. Share your ideas with the class.



EXERCISES

1. Fill in the blanks.

- 1) Food comes from plants or _____.
- 2) The number of people living in the same area is called _____.
- 3) Clothes are made from plants such as _____ and _____.
- 4) People in a family need _____ and _____ to live.
- 5) People get resources such as wood and rocks from the _____ environment.

2. Put a tick (✓) on the correct answer.

- 1) Which one is a natural resource?
 - a. pen
 - b. book
 - c. soil
 - d. table
- 2) Who mainly destroys the natural environment?
 - a. animals
 - b. plants
 - c. livestock
 - d. human beings

3. Answer the following questions.

- 1) What happens to our life if the population continues to grow?
- 2) Name five resources that we get from the natural environment.

4. Using the words in the box, explain what happens to the natural environment when the population increases. Write in two sentences.

natural resources destroy natural environment more



Glossary

Terms	Meaning of Teams	Page
Amphibian	Vertebrate that starts life in the water and then lives on land as an adult.	12
Animal	Living things that have the ability to move. They have senses that help them to see, hear, smell and taste things.	8
Backbone	A series of bones that helps to support the animal's body.	11
Bird	Vertebrate that has feathers, two wings, two legs, and lays eggs.	13
Carbon dioxide	A gas that cannot help something to burn.	39, 40
Communication	Sending information from one person to others.	71, 72
Components of environment	All things in our environment.	2
Electricity	A form of energy that we can use to run appliances.	59
Energy	The ability to do things.	60
Environment	All the living and nonliving things that surround us.	2
Fish	Vertebrate that lives in water, is covered with scales, and move with its fins in water.	12
Flowering plant	Plant that bears flowers.	10
Gas	A state of matter that flows and has no definite shape or volume of its own.	19, 20
Heat	A form of energy that makes things warm.	59
Herb	Plant that is smaller than shrubs, having soft stems which do not become woody	10
Humus	Decayed remains of plant and animal.	32
Ice	Frozen water.	19
Information	Knowledge that we receive about someone or something by communication.	69
Invertebrate	An animal that does not have a backbone.	11
Light	A form of energy that we can see.	59
Liquid	A state of matter that has its own volume but does not have definite shape. It flows and takes the shape of any container.	19, 20
Living thing	Thing that grows, changes and produces other living things by itself	6
Mammal	Vertebrate that has hair or fur, does not lay eggs, and produces milk for its young.	13
Man-made environment	Environment having man-made things.	4
Man-made thing	Thing that is made by people.	4
Matter	Matetial that has weight and takes up space	17
Media	Tools such as television, radio and newspaper that are used to deliver information.	70



Glossary

Natural environment	Environment having natural things.	4
Natural resource	Something from Earth that people use.	25, 77
Natural thing	Thing that is not made by people.	4
Non-flowering plant	Plant that does not bear flowers.	10
Non-Living thing	Thing that does not eat, drink, grow or make other things by itself.	7
Nutrient	A substance that living things need in order to survive and grow.	44
Oxygen	A gas that can help something to burn.	39, 40
Plant	Living thing that has roots, stems, and leaves and make its own food.	8
Population	The number of people who lives in the same area.	75
Reptile	Vertebrate that has dry, scaly skins, and lays eggs on land.	12
Shrub	Plant that is woody, smaller than trees, having several branches arising from near the base of the main stem.	10
Soil	The loose material that covers much of the Earth's surface.	30
Solid	A state of matter that has its own volume and shape.	20
Technology	A piece of equipment, tool, device, machine, or method that makes our work easier, better or quicker.	63
Tree	Plant which is large in size, has a woody main stem, giving rise to branches and leaves.	10
Vertebrate	An animal that has a backbone.	11
Water Vapour	Gaseous state of water which is in the invisible form.	19



Academic year 2018, Science-3



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শেখ হাসিনার বাংলাদেশ



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